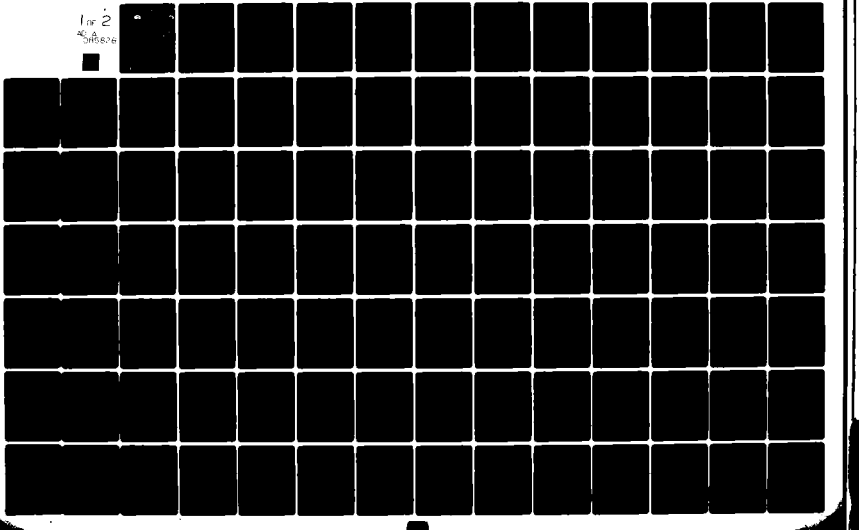
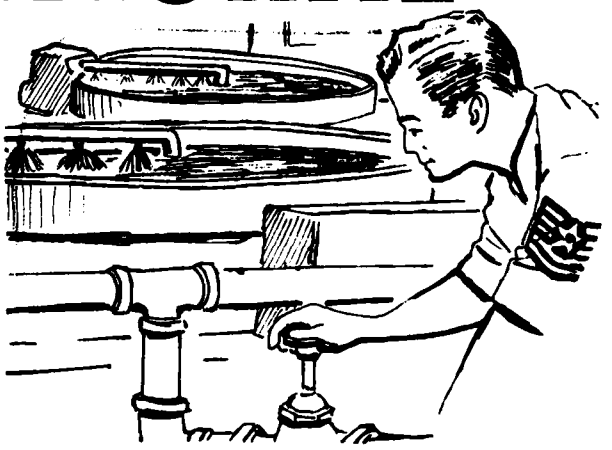
AD-A085 828 AIR FORCE OCCUPATIONAL MEASUREMENT CENTER RANDOLPH AFB TX F/G 5/9
PLUMBING AND ENVIRONMENTAL SUPPORT SPECIALTIES AFSCS 552X5/566X--ETC(U)
MAY 80

UNCLASSIFIED NL



UNITED STATES AIR FORCE

OCCUPATIONAL SURVEY REPORT



PLUMBING AND ENVIRONMENTAL SUPPORT SPECIALTIES

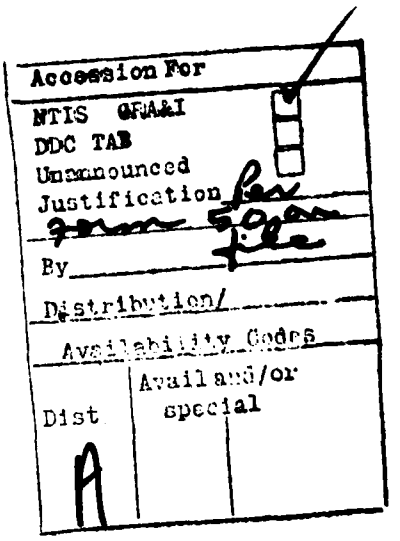
AFSCs 552X5/566X1.

AFPT-90-552-387

MAY 1980

OCCUPATIONAL ANALYSIS PROGRAM
USAF OCCUPATIONAL MEASUREMENT CENTER
AIR TRAINING COMMAND
RANDOLPH AFB, TEXAS 78148

TABLE OF CONTENTS



PREFACE

This report presents the results of a detailed Air Force Occupational Survey of the Environmental Support (AFS 566X1) and Plumbing (AFS 552X5) specialties. The project was directed by USAF Program Technical Training, Volume 2, dated February 1978. Authority for conducting occupational surveys is contained in AFR 35-2.

The survey instrument was developed by Mr. David L. Williams, Inventory Development Specialist. Captain William E. Griffith, Occupational Survey Analyst, analyzed the survey data and wrote the final report. This report has been reviewed and approved by Lieutenant Colonel Jimmy L. Mitchell, Chief, Airman Career Ladders Analysis Section, Occupational Survey Branch, USAF Occupational Measurement Center, Randolph AFB TX 78148.

The occupational survey program within the Air Force has been in existence since 1956 when initial research was undertaken by the Air Force Human Resources Laboratory to develop the methodology for conducting occupational surveys. By 1967, an operational survey program was established within Air Training Command and surveys were produced annually on 12 enlisted ladders. In 1972, the program was expanded to produce occupational surveys on 51 career ladders annually.

Computer programs for analyzing occupational data were designed by Dr. Raymond E. Christal, Manpower and Personnel Division, Air Force Human Resources Laboratory (AFHRL), and were written by the Computer Programming Branch, Technical Services Division, AFHRL.

Copies of this report are available to air staff sections, major commands, and other interested training and management personnel upon request to the USAF Occupational Measurement Center, attention of the Chief, Occupational Survey Branch (OMY), Randolph AFB TX 78148.

This report has been reviewed and is approved.

BILLY C. McMASTER, Col, USAF
Commander
USAF Occupational Measurement Center

WALTER E. DRISKILL, Ph.D.
Chief, Occupational Survey Branch
USAF Occupational Measurement Center

SUMMARY OF RESULTS

1. Survey Coverage: The joint plumbing and environmental support USAF job inventory was administered worldwide during 1979. Survey results are based on the responses of 1,827 job incumbents. The survey sample includes 1,062 of the 1,525 plumbers in the career ladder, representing 70 percent of the specialty. Of the 1,006 environmental support personnel assigned, 765 or 76 percent were included in the final sample.

2. Career Ladder Structure: A distinct dichotomy was found to exist in the jobs performed by plumbers compared to environmental support personnel. The plumbing career ladder was found to be relatively homogeneous in terms of tasks performed, while the environmental support career ladder was very heterogeneous.

3. DAFSC and AFMS groups: In both career ladders, the nature of jobs performed changed as skill level and time in the service increased. In both specialties, 3- and 5-skill level personnel performed very similar jobs, while 7-skill level personnel performed supervision, management, and training tasks in addition to technical tasks.

4. CONUS/Overseas Comparisons: Environmental support personnel located at CONUS installations devoted more time testing water and waste water and operating and maintaining water and waste plants. No discernible CONUS/ Overseas differences were observed in plumbers.

5. Equipment Maintained: While personnel in both career ladders maintained a variety of equipment, very little equipment was maintained in common by members of both specialties. Only three types of pumps and five types of valves were maintained by both plumbers and environmental support personnel.

6. Training Analysis: In both career ladders, a listing of tasks rated high in recommended training emphasis was identified. These tasks were generally technically oriented and performed by substantial percentages of first term airmen, indicating good potential for formalized training.

7. Career Ladder Documents: The specialty descriptions in AFR 39-1, the Specialty Training Standard (STS), and Plan of Instruction (POI) for both specialties were reviewed and found to be generally consistent with the survey data. In the documents of both specialties however, areas were identified that warrant review by subject matter specialists and career ladder monitors.

8. Implications: The possibility of merging the two specialties is not supported by the survey data. This is due to the sharp dichotomy found in the career ladder structure between plumbing and environmental support jobs, by the very small core of tasks performed in common by the members of both career ladders, and by the small core of equipment maintained and operated by personnel in both specialties.

OCCUPATIONAL SURVEY REPORT
PLUMBING AND ENVIRONMENTAL SUPPORT SPECIALTIES
(AFSCs 55235, 55255, 55275, 56631, 56651, AND 56671)

INTRODUCTION

This is a report of an occupational survey of the Plumbing (AFSC 552X5) and Environmental Support (AFSC 566X1) specialties completed by the Occupational Survey Branch, USAF Occupational Measurement Center. The Plumbing specialty is a part of the structural/pavements career field, while the Environmental Support specialty is a part of the sanitation career field.

Background

Plumbing Specialty (AFS 552X5). This career ladder has had a long and relatively stable history as an Air Force Specialty. It originated in 1951 as DAFSC 564X0, a designation which it retained until 31 May 1975. At that time, it was redesignated DAFSC 552X5. There have been no major changes in assigned functions or tasks since the last Occupational Survey Report was published in December 1975. In December 1977, military plumbers were compared to civilian Air Force plumbers in terms of jobs performed and job interest (see AFHRL-TR-77-78).

Personnel in the Plumbing career ladder are responsible for installing and repairing pipe systems, plumbing fixtures, and equipment; evaluating and correcting plumbing systems for corrosion and scale; and testing and inspecting plumbing systems. The equipment and fixtures that Air Force plumbers work with include, but are not limited to, iron, steel, plastic, fiber, and copper piping and tubing; water heaters, sinks, toilets, and showers; and pumps, traps, drains, meters, unions, and fittings.

Plumbers enter the career ladder by either attending the basic course, 3ABR55235, conducted at Sheppard AFB TX or by directed duty assignment. Approximately 42 percent enter the career ladder through attendance of the basic course, which currently lasts 27 academic days.

Environmental Support Specialty (AFS 566X1). The history of this career ladder has been less stable than that of the Plumbing specialty. The specialty originated in May 1951 as DAFSC 563X0, Water Supply and Sanitation. The designation remained until April 1975, but underwent several title and function changes in that 14-year period. In September 1961, the title of the specialty was changed to Water and Waste Processing. In July 1971, the specialty was renamed Engineering Environmental Support, and two shredouts were created: Water Supply and Treatment (563X0A) and Waste Water and Sanitation (563X0B). In May 1975, the shredouts were dropped, and the specialty assumed its present title and designation.

As outlined in AFR 39-1, career ladder incumbents are responsible primarily for operating and maintaining water supply, sewage plants, and solid waste collection and disposal facilities. Personnel are also responsible

for the organizational and field maintenance of water, waste water, and solid waste processing equipment. In these functions, members commonly operate and maintain pumps, valves, switches, tanks, filters, demineralizers, and meters. Members also commonly test and treat water and waste water. Personnel generally enter the career ladder through attendance of the basic environmental support course, 3ABR56631, at Sheppard AFB, Texas. The course is mandatory for all personnel and presently lasts seven weeks.

Objectives

This survey was scheduled originally as a study of only the environmental support career ladder. However, in August 1978, Air Training Command convened a Training and Utilization Conference for the Plumbing and Environmental Support specialities. Conference participants felt that there might be some overlap in tasks performed between the two ladders and that consolidation possibilities should be examined. As a result of this conference, ATC/TTQ requested a joint survey of the two career ladders to determine commonality in terms of tasks performed and equipment maintained and operated and to ascertain whether consolidation of the two ladders was warranted.

SURVEY METHODOLOGY

Inventory Development

The data collection instrument for this joint survey was USAF Job Inventory AFPT 90-552-387. The inventory developer first reviewed the 1973 Environmental Support and 1975 Plumbing task lists and Occupational Survey Reports. Documents and publications, such as AFR 39-1 and the Specialty Training Standards, were also reviewed, From these reviews, a new tentative combined task list was developed. Next, 18 subject matter specialists at six Air Force Bases (Tyndall, Sheppard, Brooks, Randolph, Whiteman, and Offutt) were interviewed to determine the completeness and accuracy of the tentative task list. The result was a final inventory of 715 tasks grouped under 16 duty headings and an extensive background section of 43 questions that included information about the respondents, such as grade, time in service, job interest, equipment used, and systems maintained.

Survey Administration

During the period May through October 1979, consolidated base personnel offices in operational units worldwide administered the job inventory to job incumbents holding a duty AFSC of 552X5 or 566X1. These job incumbents were selected from a computer generated mailing list obtained from personnel data tapes maintained by the Air Force Human Resources Laboratory (AFHRL).

Each individual who completed the inventory first completed an identification and biographical information section and then checked each task performed in his/her current job. After checking all tasks performed, each member then rated each of these tasks on a nine-point scale showing relative

time spent on that task as compared to all other tasks checked. The ratings ranged from one (very small amount time spent) through five (about average time spent) to nine (very large amount time spent).

To determine relative time spent for each task checked by a respondent, all an incumbent's ratings are assumed to account for 100 percent of his or her time spent on the job, and are summed. Each task is then divided by the total task ratings and multiplied by 100. This procedure provides a basis for comparing tasks in terms of both percent members performing and average percent time spent.

Task Factor Administration

In addition to completing the job inventory, selected senior 552X5 and 556X1 personnel were also asked to complete a second booklet for either training emphasis or task difficulty. The task difficulty and training emphasis booklets are processed separately from the job inventories. This information is then used in a number of different analyses discussed in more detail within the report.

Task Difficulty. Each individual completing a task difficulty booklet was asked to rate all of the tasks on a nine-point scale (from extremely low to extremely high) as to the relative difficulty of each task in the inventory. Difficulty is defined as the length of time required by the average member to learn to do that task. Task difficulty data were independently collected from 38 Plumbing specialists and technicians and 32 Environmental Support senior 5- and 7-skill level personnel, with all raters assessing the difficulty of tasks in both career ladders. Three separate sets of task difficulty data were then analyzed. These included first, task difficulty data as rated by incumbents of both career ladders combined, and second, data for each career ladder separately as rated by the members of each particular specialty. The interrater reliability (as assessed through components of variance of standard group means) was very high for each set of task difficulty data. For the combined 552X5 and 566X1 samples, the interrater reliability was .96; for Plumbers alone, it was .93; and for the data as rated by only Environmental Support personnel, it was .93. These findings suggest that the task difficulty ratings can be used jointly or separately. Finally, ratings were adjusted so that tasks of average difficulty have ratings of 5.00. The resulting data is a rank ordering of tasks indicating a degree of difficulty for each task in the inventory.

Job Difficulty Index (JDI). After computing a task difficulty rating for each inventory task, it is then possible to compute a Job Difficulty Index (JDI) for the job groups identified in the survey analysis. This index provides a relative measure of which jobs, when compared to other jobs identified, are more or less difficult. An equation using the number of tasks performed and the average difficulty per unit time spent as variables is the basis for the job difficulty index. The index ranges from 1.0 for very easy jobs to 25.0 for very difficult jobs. The indices are adjusted so that the average job difficulty index is 13.00. Thus, the more time a group spends on difficult tasks, and the more tasks they perform, the higher will be their job difficulty index.

Training Emphasis. Individuals completing training emphasis booklets were asked to rate tasks on a ten-point scale from no training required to extremely heavy training required. Training emphasis is a rating of which tasks require structured training for first-term personnel. Structured training is defined as training provided at resident technical schools, field training detachments (FTD), mobile training teams (MTT), formal OJT, or any other organized training method. Training emphasis data were independently collected from 48 senior Plumbers and 42 senior personnel in the Environmental Support career ladder. Training emphasis data were analyzed only for each career ladder individually. The interrater reliability (as assessed through components of variance of standard group means) for Plumbing raters was .97 and for Environmental Support raters was .93, indicating that, within each career ladder, there was good agreement among raters as to which tasks required some form of structured training and which did not. In the Plumbing specialty, tasks rated highest in training emphasis had ratings of 3.3 and above, the average training emphasis rating was 1.7, and those tasks below 0.1 required very little emphasis in training. In the Environmental Support specialty, tasks rated highest in training emphasis had ratings of 3.9 and above, the average training emphasis rating was 2.4, and those tasks rated 0.9 and below could be considered to require very little emphasis in training.

When used in conjunction with other factors, such as percent members performing, the task difficulty and training emphasis ratings can provide an insight into training requirements. This may help validate the lengthening or shortening of specific units of instruction in various training programs.

Survey Sample

Tables 1 and 2 indicate the distribution by paygrade of assigned personnel in the two career ladders as of April 1979. Also included is the distribution by paygrade of the respondents in the final survey sample.

Tables 3 and 4 show the percentage of respondents in the two career ladders by major command. Tables 5 and 6 illustrate the distribution by Total Active Federal Military Service Time (TAFMS). As these tables illustrate, the MAJCOM, TAFMS, and paygrade distributions of the survey sample were representative of the 552X5 and 566X1 career ladders as a whole.

TABLE 1

PAYGRADE DISTRIBUTION OF 552X5 SAMPLE
(N=1,049)

GRADE	PERCENT OF ASSIGNED	PERCENT OF SAMPLE
AMN (E-1 THRU E-3)	41	41
E-4	26	24
E-5	21	22
E-6	9	10
E-7	3	3

TABLE 2

PAYGRADE DISTRIBUTION OF 566X1 SAMPLE
(N=758)

GRADE	PERCENT OF ASSIGNED	PERCENT OF SAMPLE
AMN (E-1 THRU E-3)	37	38
E-4	26	24
E-5	21	22
E-6	11	11
E-7	5	4
OTHER	-	*

* INCLUDES THREE INDIVIDUALS IN PAYGRADE E-8

TABLE 3

MAJCOM DISTRIBUTION OF 552X5 SAMPLE
(N=1,049)

MAJCOM	PERCENT OF ASSIGNED	PERCENT OF SAMPLE
SAC	27	25
TAC	18	20
MAC	13	13
ATC	10	11
PACAF	9	9
USAFE	6	5
ADCOM	5	4
AFSC	4	5
AFLC	4	3
AAC	4	4
OTHER*	-	1

* HQ USAF, USAFA, ESC

TABLE 4

MAJCOM DISTRIBUTION OF 566X1 SAMPLE
(N=758)

MAJCOM	PERCENT OF ASSIGNED	PERCENT OF SAMPLE
SAC	30	29
TAC	19	21
MAC	14	14
ATC	8	8
USAFE	8	6
PACAF	8	7
AFSC	4	3
AFLC	4	4
AAC	3	3
ADCOM	2	3
OTHER*	-	2

* HQ USAF, USAFA, NOT LISTED

TABLE 5

AFMS DISTRIBUTION OF 552X5 SAMPLE

	MONTHS TOTAL ACTIVE FEDERAL MILITARY SERVICE							
	1-24	25-48	1-48	49-96	97-144	145-192	193-240	241+
PERCENT OF SAMPLE	31%	24%	55%	16%	15%	6%	7%	1%
NUMBER IN SAMPLE	326	246	572	172	153	61	77	14

TABLE 6

AFMS DISTRIBUTION OF 566X1 SAMPLE

	MONTHS TOTAL ACTIVE FEDERAL MILITARY SERVICE							
	1-24	25-48	1-48	49-96	97-144	145-192	193-240	241+
PERCENT OF SAMPLE	28%	26%	54%	13%	17%	7%	8%	1%
NUMBER IN SAMPLE	214	196	410	95	125	54	57	13

ANALYSIS OF CAREER LADDER STRUCTURE

A key aspect of the USAF Occupational Survey Program is the examination of the actual structure of career ladders--what people are doing in the field, rather than how official career ladder documents say they are organized. This analysis is made possible by the Comprehensive Occupational Data Analysis Programs (CODAP). CODAP consists of 40 programs which generate a number of statistical products used in the analysis of career ladders. A primary product used to analyze career ladders is a hierarchical clustering of all jobs based on the similarity of tasks performed and relative time spent. This process permits identification of the major types of work being performed in the occupation (career ladder) and is analyzed in terms of the job description and background data of each type of job. This information is then used to examine the accuracy and completeness of career ladder documents (AFR 39-1 specialty descriptions and specialty training standards) and to formulate an understanding of current utilization patterns.

The basic identifying group used in the hierarchical job structure is the Job Type. A job type is a group of individuals who perform many of the same tasks and spend similar amounts of time performing these tasks. A Cluster is a group of job types which have a substantial degree of similarity. Finally, there are often specialized jobs that are too dissimilar to be grouped into any cluster. These unique groups are labeled Independent Job Types.

Based on task similarity and relative percent time spent, the best division of the jobs performed in the 552X5 and 566X1 ladders is illustrated in Figures 1 through 4. These job clusters and job types are listed below. (The GRP number shown beside each title is a reference to computer printed information in the EXTRACT provided as supplemental information for use by classification and training officials.)

Environmental Support Functions

I. SYSTEMS OPERATION AND EQUIPMENT MAINTENANCE PERSONNEL (N=267, GRP192)

   a. Sewage Systems Personnel (N=113, GRP257)
   b. Water Plant Personnel (N=111, GRP271)
   c. Missile Water Section Personnel (N=32, GRP362)

II. CHEYENNE MOUNTAIN SANITATION SPECIALISTS (N=5, GRP227)

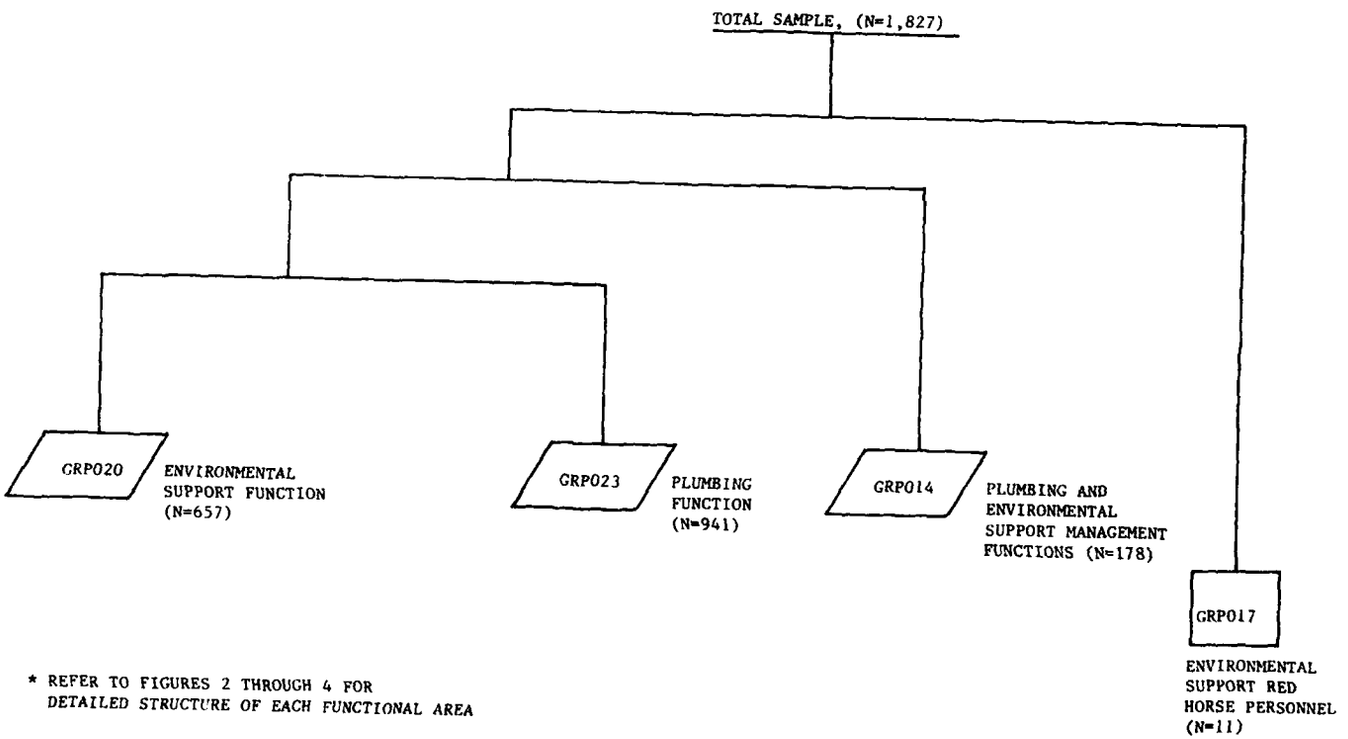
III. WATER TREATMENT PERSONNEL (N=36, GRP232)

IV. TECHNICAL SUPERVISORS (N=84, GRP185)

   a. NCOICs, Environmental Support (N=63, GRP345)
   b. Chemical Treatment Supervisors (N=8, GRP368)
   c. NCOICs, Swimming Pools (N=7, GRP367)

FIGURE 1

COMBINED 552X5 AND 566X1 CAREER LADDER STRUCTURE*



* REFER TO FIGURES 2 THROUGH 4 FOR DETAILED STRUCTURE OF EACH FUNCTIONAL AREA

V. SWIMMING POOL OPERATORS (N=94, GRP136)

a. Swimming Pool Specialists (N=70, GRP215)
b. Swimming Pool/Lift Station Workers (N=7, GRP265)
c. Swimming Pool/Lift Station Supervisors (N=11, GRP246)

VI. SEWAGE PLANT OPERATORS (N=50, GRP102)

VII. LIFT STATION OPERATORS (N=10, GRP097)

VIII. NOVICE ENVIRONMENTAL SUPPORT PERSONNEL (N=6, GRP317)

IX. WATER ANALYSIS PERSONNEL (N=16, GRP048)

a. Sewage Plant Laboratory Analysts (N=8, GRP104)
b. Special Purpose Water Analysts (N=7, GRP210)

X. SEWAGE EQUIPMENT CLEANERS (N=5, GRP198)

Plumbing Functions

XI. GENERAL PLUMBERS (N=699, GRP386)

a. Basic Plumbers (N=305, GRP494)
b. Journeymen Plumbers (N=383, GRP479)

XII. FIXTURE REPLACEMENT PERSONNEL (N=6, GRP419)

XIII. WORK CREW SUPERVISORS (N=9, GRP=308)

XIV. WATER SYSTEMS INSPECTORS (N=10, GRP275)

XV. PIPE AND FIXTURE INSTALLERS (N=7, GRP261)

XVI. PLUMBING SHOP FOREMEN (N=24, GRP286)

XVII. RED HORSE PLUMBERS (N=11, GRP342)

XVIII. PIPE CUTTERS, THREADERS, AND ASSEMBLERS (N=5, GRP266)

XIX. STRUCTURAL MAINTENANCE AND REPAIR PERSONNEL (N=118, GRP200)

a. General Repairmen (N=99, GRP241)
b. Drain and Fixture Maintenance Personnel (N=5, GRP343)
c. Structural Maintenance Crew Supervisors (N=5, GRP293)

XX. DRAIN, FAUCET, AND WATER CLOSET REPAIRMEN (N=5, GRP196)

XXI. PIPE ASSEMBLERS (N=7, GRP115)

Plumbing and Environmental Support Management Functions

XXII. PLANT AND SECTION SUPERVISORS (N=131, GRP028)

a. Structural Maintenance and Repair Managers (N=11, GRP600)
b. Plumbing Section Supervisors (N=31, GRP407)
c. Sanitation Superintendents (N=27, GRP325)
d. Water Plant and Swimming Pool Managers (N=10, GRP352)
e. Waste and Water Plant NCOICs (N=11, GRP099)

XXIII. QUALITY CONTROL AND SYSTEMS INSPECTORS (N=8, GRP164)

XXIV. PLUMBING PLANNERS (N=27, GRP065)

a. Plumbing Installation Planners (N=7, GRP168)
b. Plumbing Requirements Planners (N=11, GRP284)

Red Horse Function

XXV. ENVIRONMENTAL SUPPORT RED HORSE PERSONNEL (N=11, GRP017)

The clusters, job types, and independent job types identified account for nearly 98 percent of the survey respondents. The remaining two percent performed jobs so unique or so limited in scope that they could not be included in the job groups identified. These individuals reported performing diverse jobs with titles such as instructional materials writer, service contracts inspector, vehicle control NCO, deep well crewmember, golf course maintenance crewmember, and valve hydrant repairman.

Overview

In the career ladder structure identified in this joint Environmental Support and Plumbing survey, three distinct major functional areas were identified. Two of them, the Environmental Support function and the Plumbing function, were composed almost entirely of members from their respective ladders. Ninety-nine percent of the incumbents in the Environmental Support function held DAFSC 566X1, while 100 percent of the Plumbing function members held DAFSC 552X5. It should be emphasized that these functional job groupings were not artificially created by combining all members holding a particular DAFSC, but instead were groupings that occurred based upon the degree of similarity in the tasks performed and amount of time devoted to performing those tasks.

The third functional area identified was the Plumbing and Environmental Support Management function. This was a relatively small grouping of supervisory, managerial, and inspection personnel from both career ladders who, for the most part, devoted more time to performing nontechnical tasks than to technical equipment operation and maintenance tasks.

In addition to the three major functional areas identified, a fourth, smaller group of Environmental Support Red Horse Personnel were identified. These members differed markedly from other Environmental Support personnel in terms of the field equipment operated and maintained and tasks performed.

Figures 2 through 4 show in detail the career ladder structure of the three functional areas identified. The tasks commonly performed by the members in each functional job group are listed in Appendix A. While not all tasks commonly performed are listed, those which best illustrate the nature of tasks a particular job group perform are shown.

In addition to the narrative sections describing tasks and duties performed by career ladder functional job groups, the career ladder section also contains tables and figures which illustrate key background and task data for job groups. Tables 10 through 15 list background data and job satisfaction information for each of the functional job groups identified in the survey sample. Table 10, for example, shows that a very high percentage of members in the Missile Water Section job group are assigned to SAC while a large percentage of Technical Supervisors are assigned to TAC. Table 13 illustrates that less than half the members of the Pipe Cutter, Threader, and Assembler job group find their job interesting while over 80 percent of the Journeymen Plumbers find their job interesting.

Tables 7, 8, and 9 and Figure 5 are helpful in illustrating the substantial differences between the Plumbing and Environmental Support career ladders, in terms of tasks and duties performed. The tasks in Tables 7 and 8 are presented in descending order of percent members performing them by career ladder. These two tables point out three key facts: 1) the tasks performed by most Plumbers are performed by few Environmental Support personnel; 2) the tasks performed by most Environmental Support personnel are generally, but not always performed by few Plumbers; and 3) there are very few tasks performed jointly by large percentages of personnel in both career ladders. Table 9 shows the small core of tasks performed by members in both career ladders.

Figure 5 illustrates the differences in time devoted to performing duties by career ladders. The figure shows graphically the percent time spent performing each duty by Plumbers and Environmental Support personnel. The graph shows that there are five duties that Plumbers devote more time to, four duties that Environmental Support personnel spend far more time on, and seven duties that members of both specialties spend roughly equivalent time performing.

The tasks contained in the seven duties which consume similar percentages of time in both career ladders are nontechnical or general in nature. They include supervisory, management, training, and administrative tasks. Also included are general tasks, such as cleaning and maintaining facilities, and systems inspection tasks. While these systems inspection tasks appear at first glance to be an area of commonality, the commonality is artificial with Plumbers inspecting only plumbing systems and Environmental Support personnel inspecting waste and water systems.

The duties performed primarily by just one specialty are technical in nature. Generally, plumbers maintain pipes, fittings, appurtenances, fixtures, and water and sewage distribution systems while Environmental

TABLE 7

TASKS CHARACTERISTIC OF PLUMBING PERSONNEL
(DAFSC 552X5)

TASK	PERCENT MEMBERS PERFORMING 552X5* (N=941)	566X1** (N=758)
REMOVE OR REPLACE FAUCETS	93	6
ASSEMBLE COPPER TUBING USING SWEAT SOLDERED FITTINGS	92	10
REAM PIPING	91	7
BEND TUBING BY HAND	91	14
REMOVE OR REPLACE TRAPS	90	4
REMOVE OR REPLACE COMPONENTS OF WATER CLOSET TANK FLOAT VALVES	90	3
OPEN CLOGGED OR RESTRICTED DRAINS USING HAND OPERATED AUGERS	90	6
REMOVE OR REPLACE COMPONENTS OF FAUCETS	90	5
ASSEMBLE OR DISASSEMBLE THREADED PIPE FITTINGS	89	33
OPEN CLOGGED OR RESTRICTED DRAINS USING POWER OPERATED AUGERS	89	3
ASSEMBLE COPPER TUBING USING FLARED FITTINGS	89	22
REMOVE OR REPLACE COMPONENTS OF WATER CLOSET TANK FLUSH VALVES	88	1
REMOVE OR REPLACE COMPONENTS OF FLUSHOMETER VALVES	87	3
MEASURE PIPE LENGTHS	84	19
ASSEMBLE COPPER TUBING USING FERRULED FITTINGS	84	15
REAM TUBING	84	8
REMOVE OR REPLACE WATER FOUNTAINS	83	1
THREAD PIPES USING MOUNTED POWER THREADERS	82	5
THREAD PIPES USING HAND THREADERS	82	17
ASSEMBLE OR DISASSEMBLE PLASTIC PIPE FITTINGS	82	29
REMOVE OR REPLACE DOMESTIC LAVATORIES	82	1
LOCATE LEAKS IN WATER OR SEWER PIPES	81	30
REMOVE OR REPLACE VALVES USING THREADED CONNECTIONS	80	20
OPEN CLOGGED OR RESTRICTED DRAINS USING VACUUM PRESSURE PLUNGERS	80	2

* INCLUDES ONLY MEMBERS IDENTIFIED IN PLUMBING FUNCTION (GRP023)
** INCLUDES ALL ENVIRONMENTAL SUPPORT PERSONNEL

TABLE 8

TASKS CHARACTERISTIC OF ENVIRONMENTAL SUPPORT PERSONNEL
(DAFSC 566X1)

TASK	PERCENT MEMBERS PERFORMING	
	566X1* (N=657)	552X5** (N=1,049)
PERFORM pH TESTS	92	2
OPERATE PUMPS	85	48
PERFORM CHLORINE RESIDUAL TESTS	80	1
REPACK PUMPS	77	13
READ METERS OR RECORDING DEVICES	76	9
ADD CHEMICALS TO CHEMICAL FEEDERS OR HYPOCHLORINATORS	75	1
REMOVE OR REPLACE CHLORINE CYLINDERS	73	1
WASH OR WAX SHOP VEHICLES	73	64
ADJUST CHEMICAL FEEDERS OR HYPOCHLORINATORS	71	1
SCRAPE OR PAINT EQUIPMENT OR FACILITIES	69	18
CLEAN UP JOB SITES	69	71
OPERATE MANUAL VALVES	67	50
PERFORM HOUSEKEEPING FUNCTIONS	67	47
ADD CHEMICALS TO SWIMMING POOL WATER	65	1
UNCLOG PUMPS	61	25
CLEAN WATER AND WASTE WATER PLANT EQUIPMENT	61	2
CHECK ENGINE OIL LEVELS	61	37
POST ENTRIES IN DAILY LOGS	60	9
CHECK ENCASED MOTOR OIL LEVELS	59	23
MIX CHEMICALS	59	2
REMOVE OR REPLACE SUMP PUMPS	59	51
VISUALLY CHECK CHARTS ON RECORDERS	57	2
CLEAN CHEMICAL FEEDERS	57	1
OPERATE ELECTRIC MOTORS	57	17
READ INSTALLED METERS, SUCH AS WATER OR GAS METERS	56	12

* INCLUDES ONLY MEMBERS OF ENVIRONMENTAL SUPPORT FUNCTION (GRP020)
** INCLUDES ALL PLUMBING PERSONNEL

TABLE 9

TASKS COMMONLY PERFORMED BY 552X5 AND 566X1 PERSONNEL

TASK	ALL 552X5 (N=1,049)	FIRST JOB 552X5 (N=326)	ALL 566X1 (N=758)	FIRST JOB 566X1 (N=214)
CLEAN UP JOB SITES	71	81	62	61
WASH OR WAX SHOP VEHICLES	64	73	67	70
OPERATE PUMPS	48	53	78	80
ASSEMBLE OR DISASSEMBLE THREADED PIPE FITTINGS	81	88	33	*
OPERATE MANUAL VALVES	50	56	61	61
REMOVE OR REPLACE COMPONENTS OF GATE VALVES	65	67	46	43
REPACK GATE VALVES	62	62	48	45
PERFORM HOUSEKEEPING FUNCTIONS	47	40	61	61
CLEAN OR LUBRICATE HAND TOOLS	64	68	43	49
REMOVE OR REPLACE SUMP PUMPS	51	52	53	46
LOCATE LEAKS IN WATER OR SEWER PIPES	72	78	30	31
REMOVE OR REPLACE COMPONENTS OF GLOBE VALVES	60	60	31	*
CHECK ENGINE OIL LEVELS	37	46	54	56
INSPECT PIPING FOR CORROSION	52	50	37	32
REPACK GLOBE VALVES	55	52	31	33
CHECK ENGINE BATTERY WATER LEVELS	34	43	47	44
REMOVE OR REPLACE COMPONENTS OF CHECK VALVES	35	35	42	39
OPERATE PORTABLE GASOLINE ENGINES	35	38	37	32
CHECK ENGINE WATER LEVELS	31	38	40	36
REMOVE OR REPLACE CIRCULATING PUMPS	36	34	30	*

* PERFORMED BY LESS THAN 30 PERCENT, INDICATING THAT THESE TASKS ARE NOT CONSIDERED COMMON TO FIRST JOB PERSONNEL IN BOTH CAREER LADDERS.

Support personnel do not. Similarly, Environmental Support personnel operate water plants, waste water plants, and swimming pools, and analyze water and waste water while Plumbers do not. This indicates that while the members of both ladders may perform supervisory, management, administrative, and some general tasks in common, the heart of their career ladders - the technical tasks and duties - are not performed in common.

Environmental Support Functions

Within the Environmental Support function, four major job clusters and six independent job types were identified. The members of these job groups performed tasks related to the operation and maintenance of equipment found in four specialized duty areas within environmental support: sewage treatment, water supply, missile water treatment, and swimming pools. Two factors differentiated the various job groupings. The first was the member's primary functional area of assignment and the second was the amount of time devoted to equipment maintenance. Some job groups, notably the three job types in the Systems Operation and Equipment Maintenance cluster (GRP192), performed many tasks dealing with maintaining pumps, motors, valves, and chlorinators while most other job groups devoted less time to equipment maintenance. Figure 2 illustrates the structure of the Environmental Support functional area.

I. SYSTEMS OPERATION AND EQUIPMENT MAINTENANCE PERSONNEL, (N=267, GRP192). The members of this the largest Environmental Support job cluster were notable in their performance of many equipment maintenance tasks related to three work areas: sewage treatment, water supply, and missile water systems. Compared to other Environmental Support personnel, the members of this cluster devoted more time to these equipment maintenance tasks. As shown in Tables I, II, and III in Appendix A, members commonly performed maintenance tasks, such as unclogging and repacking pumps; checking the water or oil level in engines, motors, and batteries; removing and replacing components of gate and check valves; and maintaining sewer lift, sump, and well pumps.

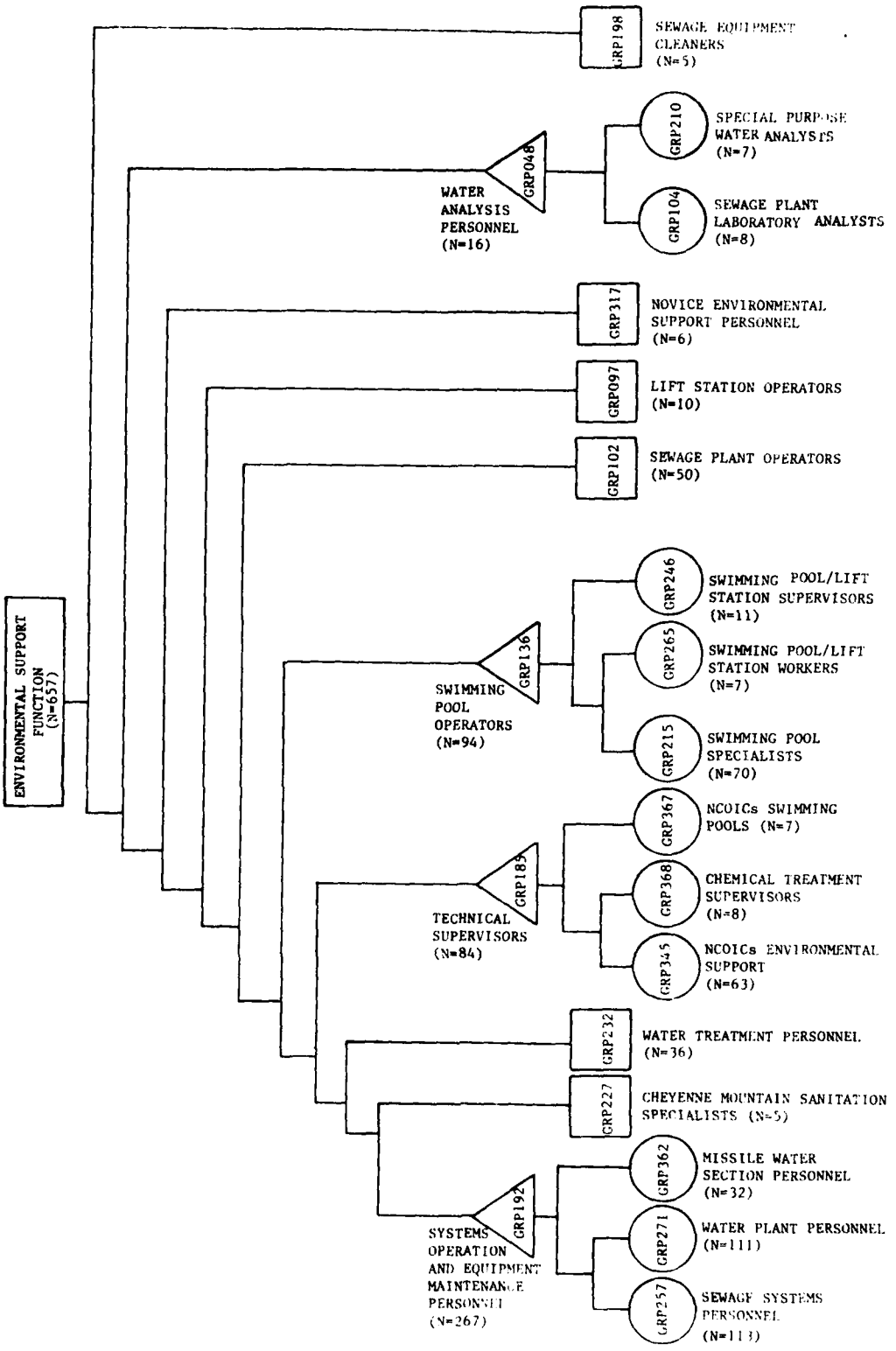
Within the job cluster, three distinct job types were identified. All performed the equipment maintenance tasks characteristic of the cluster, but differed by performing either sewage, water supply, or missile water system tasks.

Ia. Sewage Systems Personnel (N=113, GRP257). The tasks that best differentiated this group were related to operating and maintaining preliminary, primary, and secondary stage sewage treatment equipment. These tasks included operating lift stations, raking bar screens, cleaning comminutors, and adjusting grit chamber weirs; operating sludge pumps and manually removing sludge and grease from settling tanks; and operating and cleaning trickling filters. In addition, members reported performing the equipment maintenance tasks common to all personnel in the cluster (see Table I in Appendix A).

Within the sewage systems job group, a small subgroup was identified (GRP393, N=7) who reported operating and maintaining Imhoff systems. These personnel were assigned to USAFE or TAC and were located at overseas installations.

FIGURE 2

ENVIRONMENTAL SUPPORT FUNCTION - CAREER LADDER STRUCTURE



Ib. Water Plant Personnel, (N=111, GRP271). The members of this job group were differentiated by their performance of water plant and swimming pool operation and maintenance tasks, and by their nonperformance of sewage plant operation tasks. In addition to maintaining pumps, valves, feeders, hypochlorinators and other equipment, members performed tasks in support of water plant and swimming pool operations. Incumbents added chemicals to water plants and to swimming pool water; collected and tested water samples; cleaned, winterized, and recirculated swimming pools; read charts, meters, and recording devices; and posted entries in daily and monthly logs (see Table II in Appendix A).

Within this job type, three smaller subgroups of specialists were identified who, in addition to water plant tasks, specialized in maintaining fire hydrants, pumps, and valves and filters.

Ic. Missile Water Section Personnel, (N=32, GRP362). Incumbents in this job group were differentiated by the relatively high average number of tasks (168) and the high proportion of equipment maintenance and operation tasks they performed. Personnel also performed a variety of inspection tasks not commonly seen in other job groups, such as inspecting piping for corrosion, pneumatic systems piping and valves, metal tanks and water tanks, interior water distribution systems, and safety equipment and clothing. Group members maintained and operated sump, well, and sewer lift pumps; air compressors and compressor components; engines and motors; chemical feeders and hypochlorinators; and many kinds of valves. Several tasks performed were virtually unique to members of this group: removing or replacing missile site sewage and emergency shutoff valves and operating and maintaining electrodialysis units and zeolite softeners.

Most members were assigned to the Strategic Air Command (72 percent), and were located at bases where ICBMs are deployed.

II. CHEYENNE MOUNTAIN SANITATION SPECIALISTS (N=5, GRP227). The members of this very specialized group were responsible for treating and disposing of water and waste at the underground complex at Cheyenne Mountain CO. Because of the singular nature of their job, members performed many tasks that were performed by very few other personnel in the career ladder. These unique tasks included inspecting discarding unit containers and their storage areas, operating refuse incinerators, directing industrial waste and water processing, inspecting loading of refuse collection vehicles, operating tractors and forklifts, and performing grease, oil, radioactivity, and sulfite water tests. Incumbents also performed several tasks in common with the Missile Water Section personnel (GRP362), a job group also performing primarily in an underground environment. These tasks included draining water storage tanks, replacing in-plant piping, adjusting bypass valves, lubricating multipart valves, and inspecting interior water distribution systems. Table IV in Appendix A lists representative tasks performed by group members.

III. WATER TREATMENT PERSONNEL (N=36, GRP232). The tasks performed by this groups' members were similar to those that Water Plant Personnel (GRP271) performed, except that members reported spending relatively little time maintaining equipment. Tasks commonly performed included several water tests, operating and cleaning chemical feeders and

hypochlorinators, fluoridating water, and operating and replacing pumps (see Table V in Appendix A). Members reported working at water plants and swimming pools. Over half (53 percent) were assigned to SAC and 78 percent were in their first enlistment.

IV. TECHNICAL SUPERVISORS, (N=84, GRP185). The members of this comparatively senior group performed tasks characteristic of first-line supervisors. Group members reported performing an average of 179 tasks, more than any other Environmental Support group. Tasks commonly performed were a combination of first-line supervisory tasks, technical water treatment tasks, and equipment operation and maintenance tasks. Members reported counseling and supervising Environmental Support apprentices and specialists, conducting OJT, planning work assignments, and inspecting various equipment systems. Incumbents also performed many of the tasks performed by their subordinates, such as operating and repacking pumps, performing pH and chlorine residual tests, operating and maintaining chemical feeders and hypochlorinators, and maintaining valves, pumps, engines, and system components. Because of the dual nature of their job, group members performed one of the most difficult jobs identified in the Environmental Support function, with a job difficulty index of 19.11 (Ave= 13.00).

IVa. NCOICs, Environmental Support, (N=63, GRP345). Group members performed the full range of supervisory and technical tasks involved in the management of lift stations, swimming pools, water plants, and sewage treatment plants. Members performed an average of 197 tasks and had a job difficulty index of 19.93, the highest in the Environmental Support career ladder. Sixty percent of the members were in paygrade E-6 or E-7 and the same percentage held the 7-skill level DAFSC. Members supervised an average of seven subordinates.

IVb. Chemical Treatment Supervisors, (N=8, GRP368). These NCOs spent a large amount of their time testing and treating water. As Table VII in Appendix A shows, members performed such tasks as adding chemicals to hypochlorinators and water; and cleaning, operating, and maintaining chlorinators, and fluoridators. Members also commonly inspected and evaluated plant and systems operations.

IVc. NCOICs, Swimming Pools, (N=7, GRP367). The tasks that best differentiated these group members involved operating and maintaining swimming pools. Members devoted relatively large amounts of time to directing swimming pool operations; adding chemicals to swimming pools; and filling, draining, recirculating, and winterizing swimming pools. As supervisors, incumbents also performed common first-line supervision and management tasks (see Table VIII in Appendix A).

V. SWIMMING POOL OPERATORS (N=94, GRP136). Personnel in this job cluster devoted much time to operating and maintaining swimming pools. These tasks included testing and treating swimming pool water, operating and repacking pumps, performing housekeeping and cleanup functions associated with swimming pools, and reading meters and recording devices. Although most incumbents were involved primarily with swimming pool operations, approximately one-fifth were identified in two job groups who reported maintaining both swimming pool and lift station equipment.

Va. Swimming Pool Specialists, (N=70, GRP215). The members of this large group, representing 80 percent of the cluster, devoted most of their time to operating and maintaining swimming pools. Unlike the other two job types in the cluster, only a small percentage of the incumbents operated lift stations.

Vb. Swimming Pool/Lift Station Workers, (N=7, GRP265). While these personnel were involved primarily with swimming pool operations and maintenance, over 85 percent also operated and maintained lift stations and associated equipment.

Vc. Swimming Pool/Lift Station Supervisors, (N=11, GRP246). The members of this job group were the most senior in the cluster, with an average paygrade of E-5. They performed an average of 64 tasks, which was more than other cluster members. The tasks performed by these supervisors included swimming pool operation and maintenance tasks, lift station operation tasks, and supervision and training tasks characteristic of first-line supervisors: writing APRs, conducting OJT, and counseling subordinates. The performance of the lift station related tasks differentiated group members from the NCOICs, Swimming Pool (GRP367).

VI. SEWAGE PLANT OPERATORS, (N=50, GRP102). The tasks performed by the members of this job group were similar to those performed by the previously identified Sewage Systems Personnel job group (GRP257). However, sewage plant operators performed fewer equipment maintenance tasks and concentrated more on operating equipment found in the preliminary and primary stages of sewage treatment. Incumbents raked bar screens, read and changed charts on recorders, unclogged pumps, and added chemicals to feeders and hypochlorinators. They also operated and inspected sludge pumps, cleaned sidewalls of settling tanks, and skimmed grease from tanks. The percentage of personnel operating trickling filters was relatively low.

Members reported very little water testing except for pH, chlorine residual, dissolved oxygen, and settleable solid tests. Few worked with grit chambers or comminutors, and very few operated lift stations.

Personnel in the cluster were fairly junior, with 72 percent in their first enlistment (1-48 months TAFMS) and an average of only 37 months in the career field. Table X in Appendix A lists representative tasks.

VII. LIFT STATION OPERATORS, (N=10, GRP097). The tasks commonly performed by members of this group dealt with components of the preliminary stage of sewage treatment, especially lift stations. The equipment that members maintained and operated included sewage lift and booster pumps, float controls, manual valves, hypochlorinators, chemical feeders, meters, and recording devices. These sewage treatment personnel reported performing very few tasks associated with the primary and subsequent stages in the treatment process, such as raking bar screens, pumping sludge, or operating trickling filters.

VIII. NOVICE ENVIRONMENTAL SUPPORT PERSONNEL, (N=6, GRP317). Incumbents identified in this job group were among the most junior 566X1 personnel identified in the survey. Two-thirds of the incumbents were in paygrade E-2 or E-3, 83 percent were in their first enlistment, and two-thirds had been in the career field less than two years.

The tasks performed mirrored incumbents' junior status. Members performed an average of only 24 tasks, most of which were rated by senior technicians as relatively easy. These tasks included performing chlorine residual and pH tests; adding chemicals to swimming pool water, chemical feeders, and hypochlorinators; cleaning swimming pool hair catchers and chemical feeders; and backwashing sand filters and pressure filters (see Table XII in Appendix A).

IX. WATER ANALYSIS PERSONNEL (N=16, GRP048). The performance of laboratory water analysis tasks consumed almost half of incumbents' time and sharply differentiated members from other environmental support personnel. As Table XIII in Appendix A illustrates, the tasks performed by members involved primarily testing water and waste water and preparing laboratory equipment. Within the cluster, two job types were identified which differed in number of tasks performed, experience level of incumbents, and the purpose for which the laboratory analyses were performed.

IXa. Sewage Plant Laboratory Analysts, (N=8, GRP104). The tasks performed by group members were a combination of laboratory waste water analysis and sewage equipment operation and maintenance tasks. Members spent much of their time performing eight water tests and several test preparation tasks. They also commonly performed plant operation tasks, such as posting entries in logs, inspecting sludge pumps, and cleaning comminutors.

IXb. Special Purpose Water Analysts, (N=7, GRP210). This group was actually made up of two small subgroups. While the primary focus of both groups was water analysis, the two groups varied in the purpose of the testings. Three group members served as technical school instructors at Sheppard AFB TX, and performed water testing tasks in teaching students testing procedures. In addition, these three members commonly performed training tasks, such as preparing lesson plans and training aids and conducting resident course classroom training. The second subgroup of four members was assigned to the Air Force Engineering Services Center located at Tyndall AFB FL. They performed water and sewage analysis in troubleshooting problems in water and sewage plants. Discussions with group members indicated that the incumbents employed a wide range of water analysis tests and that several members also constructed miniature water and sewage plant mockups to isolate problems in water and waste systems.

The members of both subgroups were relatively senior. Over 71 percent of the members were in paygrades E-5 or E-6, and the average time in the career field was almost 12 years.

X. SEWAGE EQUIPMENT CLEANERS, (N=5, GRP198). Of all job groups identified in the Environmental Support function, none was more junior than this small job group. All incumbents were in their first enlistment, 80 percent had been in their job less than one year, and the average paygrade of members was E-3. Eighty percent of the group members were stationed overseas where they primarily performed equipment cleaning tasks in sewage plants. Members reported cleaning channels and sidewalls of sewage settling tanks, bar screens, grit removal units, parshall flumes, and trickling filter nozzles. Members performed very few other tasks. Not suprisingly, members

had the lowest job difficuly index (JDI=3.83) in the environmental support function. Also not surprisingly, members reported low job satisfaction. Only one individual found his job interesting and felt his talents utilized fairly well or better.

Plumbing Functions

The second functional area identified was the Plumbing function, composed entirely of personnel in DAFSC 552X5. Unlike the personnel identified in the Environmental Support function, virtually no Plumbers performed tasks related to water or sewage plant operation or water testing, but instead spent their time installing and maintaining pipes, tubing, fittings, appurtenances, valves, and water distribution and sewer systems.

The incumbents in the Plumbing function were identified in two main job clusters comprising 87 percent of the function. The remaining 13 percent were identified in nine smaller independent job types performing very specialized or limited jobs. The large percentage of Plumbers identified in just two major groups points out the homogeneity of the career ladder relative to Environmental Support personnel. Fully 75 percent were identified as general plumbers, indicating that a great majority of plumbers perform the same basic job. Figure 3 shows the jobs and structure of the Plumbing function.

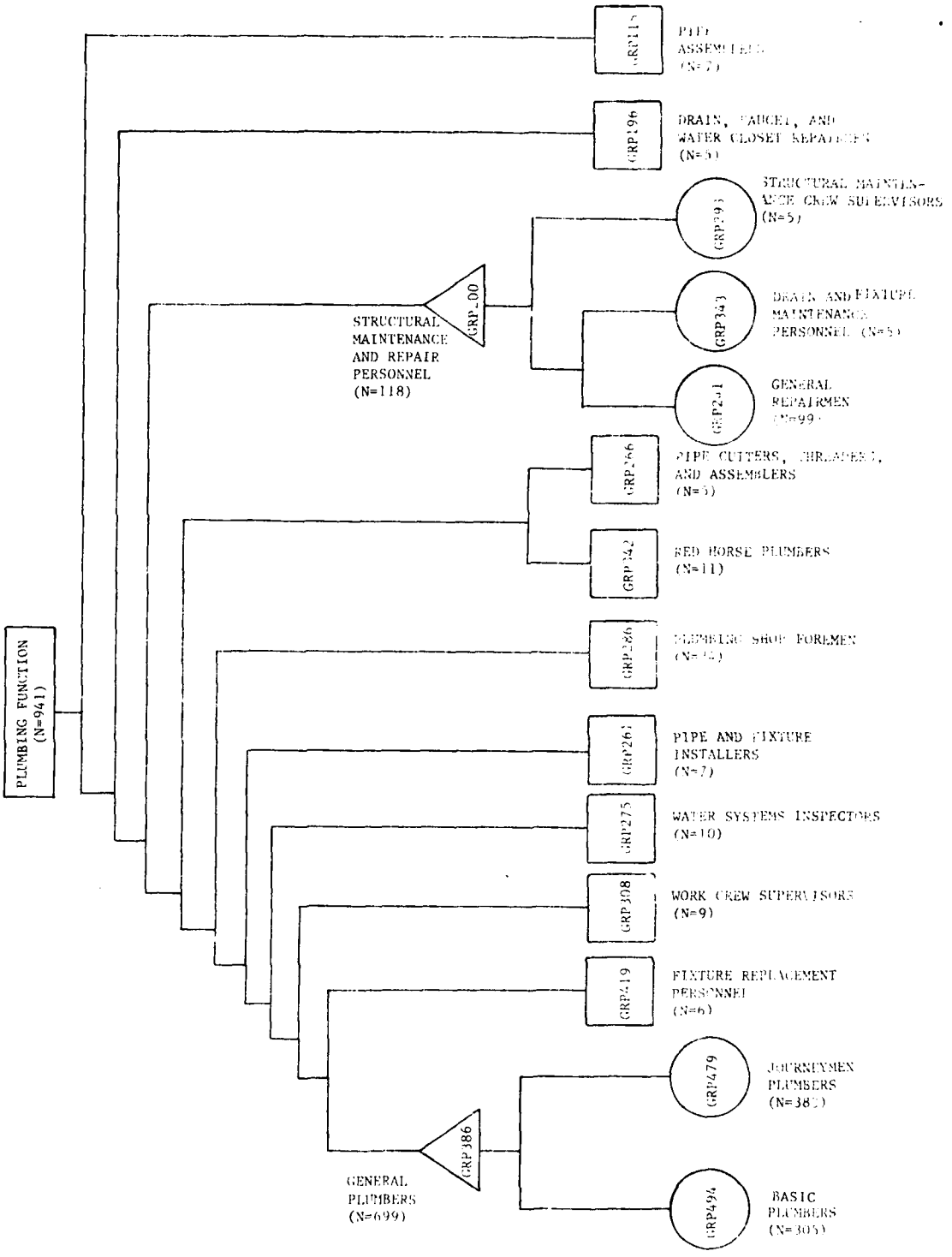
XI. GENERAL PLUMBERS (N=699, GRP386). The plumbers in this very large job group (75 percent of the Plumbing function) performed tasks characteristic of the basic plumbing job, such as: assembling, disassembling, reaming, bending, and installing pipes and tubing; removing and replacing faucets, traps, flush valves, and latrine fixtures; and opening restricted drains using augers, chemicals, and vacuum pressure. Most plumbers in this general job group also reported maintaining building service lines and water distribution systems; excavations, ditches, and trenches; and fire hydrants and lawn sprinkler systems (see Table XV in Appendix A). Within the General Plumber cluster, two large job types were identified, Basic Plumbers and Journeymen Plumbers. They differed primarily in the number of tasks performed and the experience level of the group members.

XIa. Basic Plumbers (N=305, GRP494). The members of this job type were more junior in terms of time in the service and career ladder, and in the breadth of plumbing tasks performed relative to other cluster members. Members performed an average of 96 tasks, far fewer than the 181 tasks performed by Journeymen Plumbers (GRP479). In addition, members averaged only 33 months in the career ladder and 41 months in the service, far less than the 61 months and 75 months respectively for the more senior Journeymen Plumbers. Fewer Basic Plumbers reported performing supervision, management training, and inspection tasks than did the Journeymen Plumbers.

XIb. Journeymen Plumbers (N=383, GRP479). Of the two General Plumbing job types, this was the most senior with members averaging more time in the career ladder and service and performing almost twice as many tasks. The tasks performed were very similar to those performed by Basic Plumbers except that Journeymen reported performing more of the following: cutting openings in structures to install pipes, isolating malfunctions in water

FIGURE 3

PLUMBING FUNCTION - CAREER LADDER STRUCTURE



systems, removing and replacing special fixtures and appurtenances (such as bar sinks, swing joints, and emergency showers), and inspecting plumbing work.

XII. FIXTURE REPLACEMENT PERSONNEL (N=6, GRP419). The tasks performed by the members of this small independent job type centered around removing and replacing various plumbing fixtures and components. As Table XVI in Appendix A shows, job incumbents commonly removed and replaced faucets; water closet components; gate, globe, and mixing valves; and urinals, water heaters, sinks, and showers.

XIII. WORK CREW SUPERVISORS (N=9, GRP308). The tasks performed by these personnel were a combination of technical plumbing and direct supervision tasks. The direct supervision tasks included counseling subordinates, supervising plumbers, conducting OJT, and writing APRs. The technical tasks dealt with latrine and housing fixture repair and replacement, pipe and tubing work, and opening restricted drains.

These plumbers were relatively senior, with members averaging E-5 in paygrade. The average time in the service was eight years, and members reported supervising three subordinates.

XIV. WATER SYSTEMS INSPECTORS (N=10, GRP275). While many of the tasks commonly performed by group members were the same as performed by most other plumbing job groups, members reported performing several inspection tasks that differentiated them from other plumbing groups. These tasks included: inspecting plumbing fixtures, manholes, sanitary sewage system flow, piping for corrosion, and exterior water distribution systems for leaks and pressure. Incumbents were relatively junior, with 80 percent holding the 5-skill level AFSC and an averge grade of E-3. Table XVIII in Appendix A lists representative tasks for the group.

XV. PIPE AND FIXTURE INSTALLERS (N=7, GRP261). As shown in Table XIX in Appendix A, group members performed tasks which were not commonly performed by other plumbers. Incumbents devoted 63 percent of their time to installing pipes, tubing, and fixtures. These differentiating tasks included cutting openings in structures to install plumbing fixtures, installing pipe insulation and pipe straps, reviewing engineering drawings to determine plumbing installation methods, calculating fall per foot of piping, measuring trench grade, and assembling various kinds of pipes and tubing.

XVI. PLUMBING SHOP FOREMEN (N=24, GRP286). These supervisory personnel performed the most difficult job identified in the Plumbing function. The incumbents performed an average of 216 tasks, many more than other plumbers. These tasks were a combination of supervisory and management tasks and many simple and complex technical plumbing tasks. The job difficulty index for this group was 21.48 (Average=13.00), far above all other plumbing groups.

As shown in Table XX in Appendix A, the supervisory and managment tasks commonly performed were characteristic of those required to supervise a plumbing shop. These tasks included planning work assignments, coordinating work programs with structural superintendents and work control

centers, counseling subordinates, establishing tool and equipment requirements, and writing APRs. The technical tasks included relatively difficult systems inspection tasks and working with pipes, fixtures, valves, appurtenances, and water distribution systems.

Not suprisingly, the expressed job satisfaction for members was high relative to other plumbers. Over 83 percent found their job interesting and 67 percent expressed positive reenlistment intentions.

XVII. RED HORSE PLUMBERS (N=11, GRP342). Many of the tasks commonly performed by these very junior personnel dealt with outdoor plumbing work, such as installing and assembling pipes and tubing, digging and backfilling trenches, and draining excavations (see Table XXI in Appendix A). Most of these personnel reported working in units with a Red Horse assignment. Red Horse Plumbers, 73 percent of whom were in paygrades E-2 and E-3, were assigned primary to PACAF and TAC, and 54 percent were located overseas.

XVIII. PIPE CUTTERS, THREADERS, AND ASSEMBLERS (N=5, GRP266). This was the most junior plumbing group identified in terms of grade, service time, skill level, and in terms of tasks performed. Eighty percent of the incumbents were in paygrade E-2, held the 3-skill level duty AFSC, and had been in the service less than one year.

The tasks performed dealt almost exclusively with pipes and tubing. As Table XXII in Appendix A illustrates, members primarily assembled, threaded, and cut copper tubing and plastic pipes.

XIX. STRUCTURAL MAINTENANCE AND REPAIR PERSONNEL (N=118, GRP200). This was the second job cluster identified in the Plumbing function. While many of the tasks performed were very similar to those performed by General Plumbers, structural maintenance personnel worked very little with exterior water distribution systems and instead worked indoors. Consequently, personnel in this cluster performed few tasks dealing with trenching, attaching lines to buildings, or draining excavations. Instead, incumbents removed and replaced faucets, flushometer valves, and water closet flush valves; opened restricted drains; and assembled, reamed, and threaded pipes and tubing (see Table XXIII in Appendix A). Compared to General Plumbers, personnel in this cluster performed relatively few tasks, averaging just 51 tasks.

Within this job cluster, three job types were identified, differing in the scope of the job performed and time spent performing supervisory and management tasks.

XIXa. General Repairmen (N=99, GRP241). Incumbents performed tasks characteristic of the basic structural maintenance and repair job. They commonly removed and replaced plumbing fixtures and components, opened resticted drains, and cut, threaded, and assembled pipes and tubing.

XIXb. Drain and Fixture Maintenance Personnel (N=5, GRP343). Members of this small group performed less than the full range of the structural maintenance and repair job. Incumbents performed fewer pipe and tubing tasks, and concentrated instead on opening restricted drains and removing and replacing flushometer valves, water closet tank flush valves, urinals, sinks, faucets, and water fountains.

XIXc. Structural Maintenance Crew Supervisors (N=5, GRP293). The tasks that differentiated the members of this, the most senior structural maintenance job type, dealt with supervising SMART operations. These tasks were directing SMART personnel and reviewing SMART job orders for compliance. Further, members commonly reported supervising civilians, a task not performed to the same degree by other structural maintenance personnel.

XX. DRAIN, FAUCET, AND WATER CLOSET REPAIRMEN (N=5, GRP196). The personnel in this small independent job type performed a very limited plumbing job. Only eight tasks were performed by over half of group members. These tasks dealt solely with repairing faucets and water closet tank flush and float valves, and opening restricted drains with augers, tapes, chemicals, and pressure plungers. Not surprisingly, this job was rated lower in job difficulty (JDI=3.78) than any other plumbing job type.

XXI. PIPE ASSEMBLERS (N=7, GRP115). The job performed by these junior personnel was also limited in scope. Only 16 tasks were performed by a majority of group members, and these dealt almost totally with assembling and disassembling plastic, copper, and cast iron pipes and tubing. Incumbents also reported bending tubing, attaching pipes to buildings, applying pipe wraps, and threading pipes.

Plumbing and Environmental Support Management Functions

The third functional area identified in the survey sample was composed of the supervisory, management, and inspection personnel of both the Environmental Support and Plumbing career ladders. Although this functional area was composed of personnel from both career ladders, generally the job groups identified were composed of personnel from only one ladder. Only one job group, the Quality Control and Systems Inspectors, was composed of personnel from both career ladders. This fact further emphasizes the distinctive nature of the two career ladders.

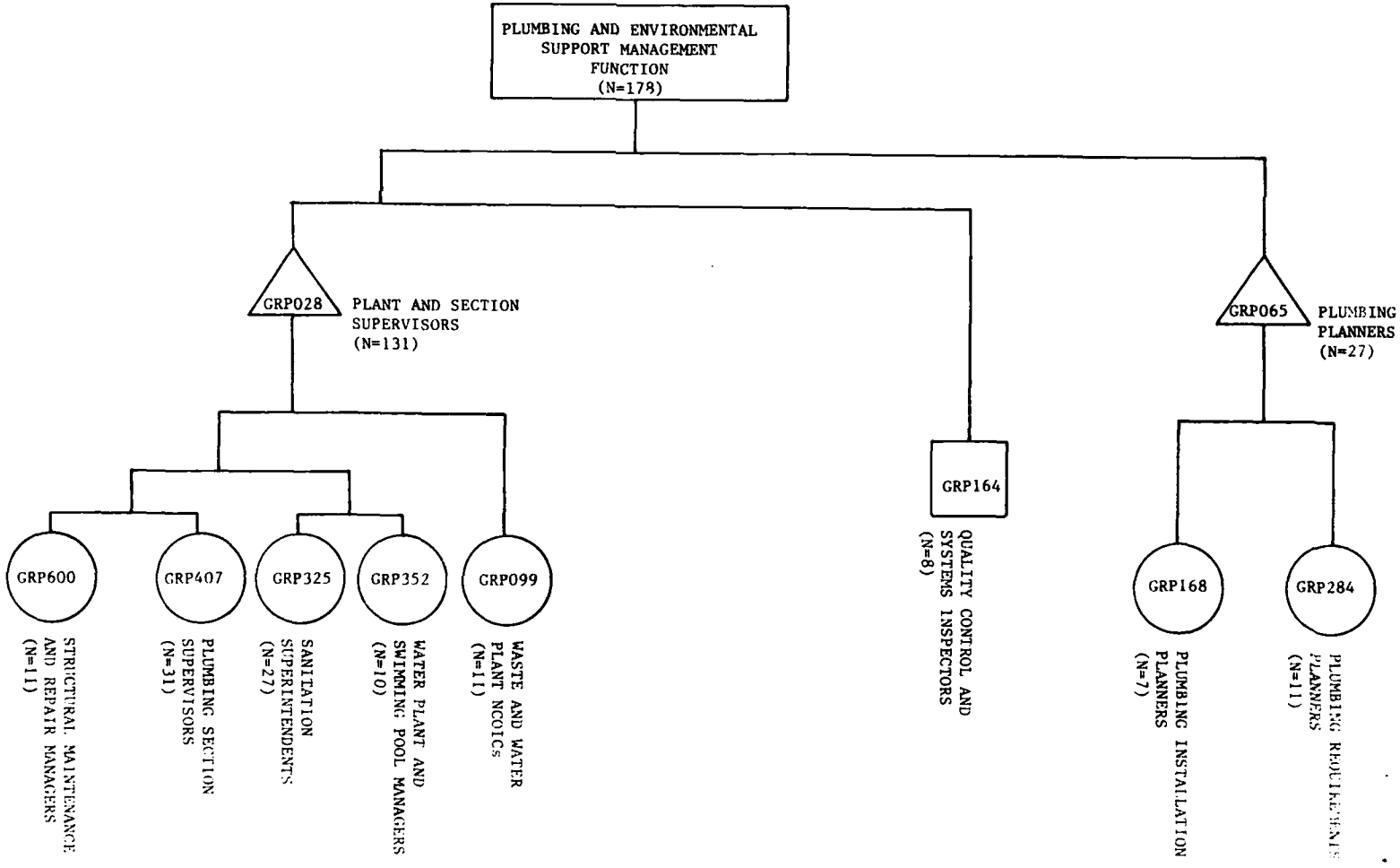
Figure 4 illustrates the structure of the Plumbing and Environmental Support Management functional area. The three job groups identified were, in general terms, unit supervisors, quality control personnel, and plumbing planners. The personnel in these three job groups were differentiated from the technical personnel by their performance of many nontechnical supervisory, management, inspection, and administrative tasks. Tasks commonly performed included counseling subordinates on personal and work related problems, writing airman performance reports, planning and coordinating work assignments, and following-up supply problems.

Personnel in this functional grouping were mostly senior supervisors and managers. The average paygrade of members was E-6, and they averaged 13½ years TAFMS time. Over 72 percent held the 7-skill level in their AFSC. The amount of supervision was higher than in the other two functional groups, with incumbents supervising an average of four subordinates.

XXII. PLANT AND SECTION SUPERVISORS (N=131, GRP028). The members of this large job cluster were differentiated by their performance of tasks associated with the management of unit operations in plumbing shops,

FIGURE 4

PLUMBING AND ENVIRONMENTAL SUPPORT MANAGEMENT FUNCTION - CAREER LADDER STRUCTURE



SMART teams, and water and sewage plants. These tasks commonly included counseling and supervising personnel, assigning personnel to duty positions, planning work assignments, establishing work priorities, and writing APRs. Within this job cluster, five job types were identified, differing primarily in the type of work section supervised, and the degree to which members performed technical tasks.

XXIIa. Structural Maintenance and Repair Managers (N=11, GRP600). The members of this plumbing job type were differentiated by the performance of several tasks infrequently performed by other survey respondents. Group members reported reviewing SMART job orders for compliance, coordinating work programs with structural superintendents, directing SMART personnel, and supervising nonplumbing and civilian personnel (see Appendix A, Table XXVI).

Group members reported supervising a relatively large number of subordinates, averaging seven. Members were comparatively senior; averaging over 15½ years TAFMS time, an average paygrade of E-6, and 82 percent at the 7-skill level.

XXIIb. Plumbing Section Supervisors (N=31 , GRP407). The members of this job type performed almost entirely as supervisors, managers, and inspectors, and performed few technical tasks. The tasks commonly performed dealt with establishing work priorities and planning work assignments, counseling subordinates on work progress and personnel problems, writing APRs, and following-up supply problems (see Table XXVII in Appendix A). The tasks which tended to differentiate the plumbing section supervisors included coordinating work programs with structural superintendents, coordinating with planning sections on work requirements, reviewing working drawings and engineering drawings to determine plumbing installation methods, and directing the installation and maintenance of various water distribution systems.

The Plumbing Section Supervisors were very senior personnel, with 81 percent in the paygrades of E-6 or E-7 and 84 percent in DAFSC 55275. Members reported supervising an average of eight subordinates, more than any job group identified in the survey.

XXIIc. Sanitation Superintendents (N=27, GRP325). Group members were the most senior personnel identified in the sample in terms of paygrade, which averaged between E-6 and E-7, and skill level, with 82 percent in DAFSC 56671. Sanitation Superintendents performed an average of 94 tasks, most of which were supervision, management, administration, and training related. The tasks which differentiated these personnel from others in the management functional area included evaluating waste plant operations, coordinating waste water operations with municipal water agencies, preparing plans for emergency water and waste water facilities, and directing industrial waste water processing. The relatively large number of tasks performed in conjunction with the relative difficulty of these tasks resulted in a job difficulty index of 17.96, the highest of any group identified in the Management functional area.

XXIId. Water Plant and Swimming Pool Managers (N=10 GRP352). The members of this small job type spent roughly equivalent amounts of their time on both nontechnical and technical tasks. As Table XXIX in Appendix A

shows, tasks commonly performed included not only the tasks previously identified as those common to all personnel in the Plant and Section Supervisors cluster, but also included performing pH and chlorine residual tests; operating pumps and electric motors; filling, draining, recirculating, and adding chemicals to swimming pool water; and custodial tasks, such as waxing vehicles, cleaning plant equipment, and cleaning up job sites. In addition to their being differentiated by the dual nature of their job, certain tasks further differentiating group members included directing swimming pool operations, inspecting water plants, and evaluating water plant operations.

XXIIe. Water and Waste Plant NCOICs (N=11, GRP099). Personnel in this job group were the most junior identified in the Plumbing and Environmental Support Management function, with 73 percent in paygrade E-5 and only 55 percent at the 7-skill level (56671). The group was also noteworthy in that a large proportion (73 percent) were stationed at bases in Germany and Alaska.

The job performed by incumbents was a combination of technical tasks and supervision and management tasks, with technical tasks predominating (see Table XXX in Appendix A). The nontechnical tasks performed were those typically performed by first-line supervisors: counseling subordinates on work progress and personal problems, conducting OJT and counseling trainees on training progress, and supervising 3- and 5-skill level environmental support personnel. Technical tasks included performing water and waste water tests, operating pumps and valves, and inspecting water plants and equipment.

XXIII. QUALITY CONTROL AND SYSTEMS INSPECTORS (N=8, GRP164). This small independent job type was composed primarily of NCOs in the Strategic Air Command who inspected and evaluated not only procedures, unit capabilities, and compliance with standards, but also systems and associated equipment (see Table XXXI in Appendix A). Group members reported spending two-thirds of their time on inspection related tasks, differentiating them sharply from other supervision and management personnel.

This job group was composed of personnel from both career ladders. Six of the eight incumbents were Environmental Support personnel, while the remaining two were Plumbers.

XXIV. PLUMBING PLANNERS (N=27, GRP065). The members of this job cluster performed very specialized tasks not seen in other job groups. Specifically, members prepared, reviewed, and evaluated working and engineering drawings of plumbing installations, planned layouts of plumbing facilities, annotated changes in equipment layout on blueprints, and inspected plumbing fixtures.

Within the cluster, two job types were identified that differed in the number of tasks performed and the primary focus of their tasks.

XXIVa. Plumbing Installation Planners (N=7, GRP168). Group members performed an average of only 16 tasks, far fewer than other Plumbing Planners. The only notable tasks performed by over half of the group members dealt with preparing and reviewing working and engineering drawings to determine plumbing installation methods and planning layouts of plumbing facilities (see Table XXXII in Appendix A).

XXIVb. Plumbing Requirements Planners (N=11, GRP284). The tasks that differentiated members of this job group dealt with assessing plumbing requirements in addition to planning layouts and installation methods. Unlike other Plumbing Planners, group members reported reviewing job phase calculation sheet forms (AF Form 1081), Base Civil Engineering work order forms (AF Form 327), and BCE job order forms (AF Form 1879) to determine job requirements. Members also reported preparing BCE work request forms and requisitions for supplies and equipment, tasks unique to this group.

Red Horse Functions (566X1)

XXV. ENVIRONMENTAL SUPPORT RED HORSE PERSONNEL (N=11, GRP017). The members of this small independent job type performed tasks that were unique. Almost no other Environmental Support personnel performed the tasks that the Red Horse personnel performed. As listed in Table XXXIV in Appendix A, the tasks characteristic of group members dealt with field operation of several water distribution and waste disposal systems. These systems and components included field erdiators, field shower systems, and field water distribution systems. Less commonly performed tasks dealt with setting up and tearing down field latrines and field urinal pits. Some members also performed such unique tasks as setting up field water heaters and performing work party security exercises (convoy techniques or cover and concealment).

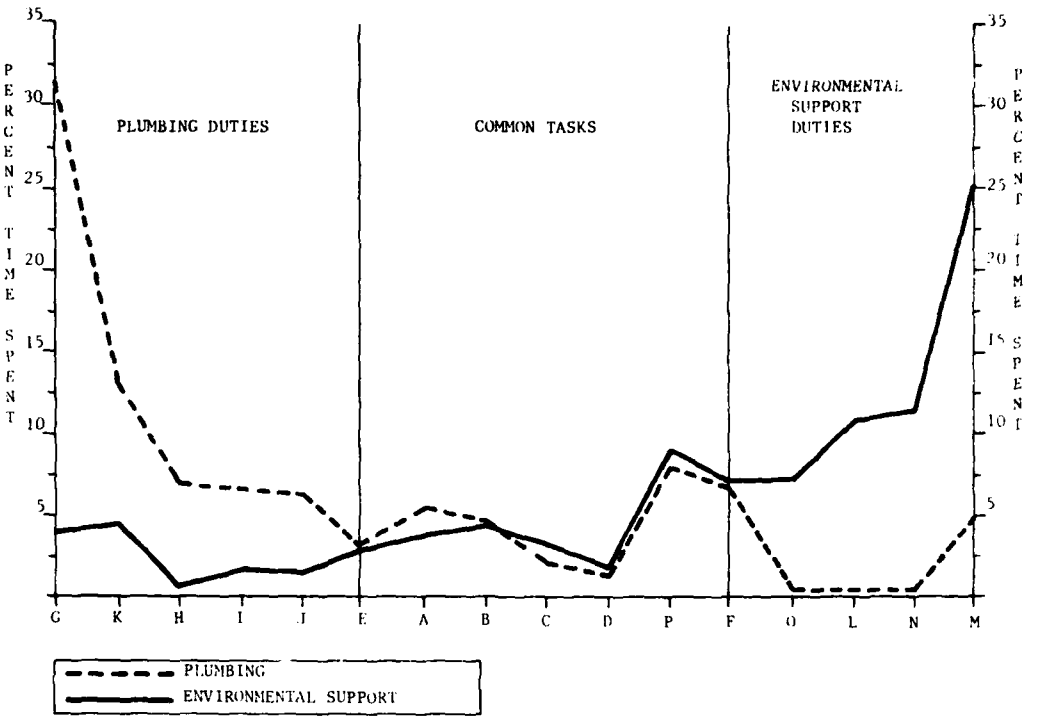
Summary

The job groups identified in the survey sample were composed almost exclusively of personnel from one particular AFSC, with virtually no mixing of Plumbing and Environmental Support personnel in the same job group. This indicates that, in terms of tasks performed and relative percent time spent on these tasks, the two career ladders differ significantly (see Figure 5).

The structure of the Environmental Support career ladder indicates that many different functions exist within that specialty. Within the Plumbing specialty however, the differences are less distinct, indicating that a majority of Plumbers perform the same basic job.

FIGURE 5

COMPARISON OF 552X5 AND 566X1 - PERCENT TIME SPENT ON DUTIES



DUTY TITLES

A ORGANIZING AND PLANNING
B DIRECTING AND IMPLEMENTING
C INSPECTING AND EVALUATING
D TRAINING
E WORKING WITH FORMS, RECORDS, REPORTS, DIRECTIVES, OR TECHNICAL DATA
F INSPECTING SYSTEMS
G INSTALLING AND REPLACING PIPES, TUBING, FITTINGS, AND APPURTENANCES
H MAINTAINING FIXTURES AND EQUIPMENT
I MAINTAINING WATER DISTRIBUTION SYSTEMS
J MAINTAINING SANITARY WASTE AND SEWER SYSTEMS
K MAINTAINING VALVES
L PERFORMING LABORATORY ANALYSIS OF WATER AND WASTE WATER
M OPERATING AND MAINTAINING EQUIPMENT
N OPERATING AND MAINTAINING WATER PLANTS AND SWIMMING POOLS
O OPERATING AND MAINTAINING WASTE WATER PLANTS
P PERFORMING GENERAL FUNCTIONS

TABLE 10

SELECTED BACKGROUND DATA FOR ENVIRONMENTAL SUPPORT CAREER LADDER FUNCTIONAL JOB GROUPS

	I. SYSTEMS OPERATION AND EQUIPMENT MAINTENANCE PERSONNEL			II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.
	SEWAGE SYSTEMS PERSONNEL	WATER PLANT PERSONNEL	MISSILE WATER SECTION PERSONNEL	CHEYENNE MOUNTAIN SANITATION SPECIALISTS	WATER TREATMENT PERSONNEL	TECHNICAL SUPERVISORS	SWIMMING POOL OPERATORS	SEWAGE PLANT OPERATORS	LIFT STATION OPERATORS	NOVICE ENVIRONMENTAL SUPPORT PERSONNEL	WATER ANALYSIS PERSONNEL	SEWAGE EQUIPMENT CLEANERS
NUMBER IN GROUP	113	111	32	5	36	84	94	50	10	6	16	5
PERCENT OF SAMPLE	6%	6%	2%	*	2%	5%	5%	3%	*	*	1%	*
PERCENT IN CONUS	86%	82%	94%	100%	83%	81%	83%	74%	100%	83%	82%	20%
MAJCOM DISTRIBUTION:												
AAC	0%	5%	0%	0%	11%	0%	1%	2%	0%	0%	0%	0%
ADCOM	7%	0%	0%	80%	0%	4%	0%	2%	0%	0%	19%	0%
ATC	14%	11%	0%	0%	3%	11%	5%	8%	0%	0%	31%	0%
MAC	8%	15%	22%	0%	6%	14%	20%	24%	20%	50%	0%	0%
PACAF	1%	6%	0%	0%	0%	7%	13%	4%	0%	17%	0%	20%
SAC	35%	21%	72%	0%	53%	21%	34%	20%	60%	33%	19%	0%
TAC	24%	28%	6%	20%	17%	30%	17%	16%	0%	0%	12%	20%
USAFE	5%	3%	0%	0%	6%	7%	1%	6%	0%	0%	6%	60%
OTHER	6%	11%	0%	0%	4%	6%	9%	18%	20%	0%	13%	0%
DAFSC DISTRIBUTION:												
56631	15%	18%	6%	0%	25%	0%	21%	20%	30%	17%	19%	60%
56651	74%	77%	84%	40%	69%	38%	69%	74%	60%	83%	25%	40%
56671	9%	5%	6%	60%	3%	60%	9%	4%	0%	0%	44%	0%
OTHER	2%	*	4%	0%	3%	2%	1%	2%	10%	0%	12%	0%
AVERAGE GRADE	3.8	3.6	3.4	4.8	3.4	5.7	3.5	3.5	3.7	3.2	4.3	3.0
AVERAGE MONTHS IN CAREER FIELD	48	43	44	99	41	141	48	37	45	36	87	20
AVERAGE MONTHS IN SERVICE	52	47	47	111	45	156	52	42	51	39	93	21
AVERAGE NUMBER TASKS PERFORMED	124	97	168	131	70	179	54	57	53	24	56	25

* INDICATES LESS THAN .5 PERCENT BUT GREATER THAN ZERO

TABLE 11

JOB SATISFACTION FOR ENVIRONMENTAL SUPPORT CAREER LADDER FUNCTIONAL JOB GROUPS

	I. SYSTEMS OPERATION AND EQUIPMENT MAINTENANCE PERSONNEL			II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.
	SEWAGE SYSTEMS PERSONNEL	WATER PLANT PERSONNEL	MISSILE WATER SECTION PERSONNEL	CHEYENNE MOUNTAIN SANITATION SPECIALISTS	WATER TREATMENT PERSONNEL	TECHNICAL SUPERVISORS	SWIMMING POOL OPERATORS	SEWAGE PLANT OPERATORS	LIFT STATION OPERATORS	NOVICE ENVIRONMENTAL SUPPORT PERSONNEL	WATER ANALYSIS PERSONNEL	SEWAGE EQUIPMENT CLEANERS
JOB INTEREST:												
DULL	8	22	9	0	17	6	28	10	20	33	13	60
SO-SO	20	20	31	20	19	11	16	20	30	0	6	20
INTERESTING	69	58	60	80	61	78	56	70	50	67	75	20
NOT REPORTED	3	*	*	0	3	5	0	0	0	0	6	0
UTILIZATION OF TALENTS:												
LITTLE OR NOT AT ALL	25	44	25	20	31	14	44	28	50	50	31	80
FAIRLY WELL OR BETTER	73	55	75	80	69	82	56	72	50	50	63	20
NOT REPORTED	2	1	0	0	0	4	0	0	0	0	6	0
UTILIZATION OF TRAINING:												
LITTLE OR NOT AT ALL	18	36	38	20	25	14	45	26	70	33	25	40
FAIRLY WELL OR BETTER	81	63	59	80	75	85	55	74	30	67	69	60
NOT REPORTED	1	1	3	0	0	1	0	0	0	0	6	0
DO YOU PLAN TO REENLIST?												
NO, OR PROBABLY NO	44	58	69	40	64	25	53	62	60	33	38	60
YES, OR PROBABLY YES	53	41	31	60	36	74	47	36	40	67	50	40
NOT REPORTED	3	1	0	0	0	1	0	2	0	0	12	0

* INDICATES LESS THAN .5 PERCENT BUT GREATER THAN ZERO

TABLE 12

SELECTED BACKGROUND DATA FOR PLUMBING CAREER LADDER FUNCTIONAL JOB GROUPS

	XI. GENERAL PLUMBERS		XII. FIXTURE REPLACEMENT PERSONNEL	XIII. WORK CREW SUPERVISORS	XIV. WATER SYSTEMS INSPECTORS	XV. PIPE AND FIXTURE INSTALLERS	XVI. PLUMBING SHOP FOREMEN	XVII. RED HORSE PLUMBERS	XVIII. PIPE CUTTERS, THREADERS, AND ASSEMBLERS	XIX. STRUCTURAL MAINTENANCE AND REPAIR PERSONNEL	XX. DRAIN, FAUCET, AND WATER CLOSET REPAIRMEN	XXI. PIPE ASSEMBLERS
	BASIC PLUMBERS	JOURNEYMEN PLUMBERS										
NUMBER IN GROUP	305	383	6	9	10	7	24	11	5	118	5	7
PERCENT OF SAMPLE	17%	21%	*	*	1%	*	1%	1%	*	6%	*	*
PERCENT IN CONUS	79%	83%	67%	56%	70%	43%	71%	46%	80%	71%	80%	100%
MAJCOM DISTRIBUTION:												
AAC	4%	4%	0%	0%	10%	14%	4%	0%	0%	3%	0%	0%
ADCOM	4%	3%	0%	0%	10%	0%	4%	0%	0%	3%	0%	0%
ATC	11%	12%	0%	22%	0%	0%	17%	9%	20%	8%	20%	0%
MAC	10%	15%	33%	0%	0%	0%	0%	0%	0%	17%	20%	0%
PACAF	7%	4%	17%	33%	10%	14%	13%	46%	0%	12%	20%	0%
SAC	30%	27%	33%	22%	10%	57%	21%	9%	40%	25%	0%	29%
TAC	23%	19%	17%	11%	30%	14%	25%	36%	20%	17%	20%	43%
USAFE	5%	6%	0%	0%	0%	0%	8%	0%	0%	7%	0%	0%
OTHER	6%	10%	0%	12%	30%	0%	8%	0%	20%	8%	20%	28%
DAFSC DISTRIBUTION:												
55235	24%	11%	17%	0%	20%	0%	4%	27%	80%	14%	0%	14%
55255	72%	67%	66%	67%	80%	86%	29%	73%	20%	78%	100%	86%
55275	4%	21%	17%	33%	0%	14%	67%	0%	0%	7%	0%	0%
OTHER	*	1%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%
AVERAGE GRADE	3.3	4.1	3.8	4.8	3.7	4.0	5.5	2.5	2.4	3.8	3.3	3.4
AVERAGE MONTHS IN CAREER FIELD	33	61	48	95	39	49	139	17	18	44	39	31
AVERAGE MONTHS IN SERVICE	41	75	77	98	50	71	159	19	20	54	41	45
AVERAGE NUMBER OF TASKS PERFORMED	96	181	74	81	71	112	216	57	48	51	20	29

* INDICATES LESS THAN .5 PERCENT BUT GREATER THAN ZERO

TABLE 13

JOB SATISFACTION FOR PLUMBING CAREER LADDER FUNCTIONAL JOB GROUPS

	XI. GENERAL PLUMBERS		XII. FIXTURE REPLACEMENT PERSONNEL	XIII. WORK CREW SUPERVISORS	XIV. WATER SYSTEMS INSPECTORS	XV. PIPE AND FIXTURE INSTALLERS	XVI. PLUMBING SHOP FOREMEN	XVII. RED HORSE PLUMBERS	XVIII. PIPE CUTTERS, THREADERS, AND ASSEMBLERS	XIX. STRUCTURAL MAINTENANCE AND REPAIR PERSONNEL	XX. DRAIN, FAUCET, AND WATER CLOSET REPAIRMEN	XXI. PIPE ASSEMBLERS
JOB INTEREST:	BASIC PLUMBERS	JOURNEYMEN PLUMBERS										
DULL	9	4	0	22	10	0	4	9	20	14	26	14
SO-SO	18	14	33	11	20	29	9	18	40	19	11	29
INTERESTING	71	81	67	67	60	71	83	73	40	64	58	57
NOT REPORTED	2	1	0	0	10	0	4	0	0	3	5	0
UTILIZATION OF TALENTS:												
LITTLE OR NOT AT ALL	19	9	17	22	40	14	17	9	40	29	47	43
FAIRLY WELL OR BETTER	80	90	83	78	60	86	83	91	60	71	53	57
NOT REPORTED	1	1	0	0	0	0	0	0	0	0	0	0
UTILIZATION OF TRAINING:												
LITTLE OR NOT AT ALL	17	10	33	22	30	14	21	27	20	20	42	29
FAIRLY WELL OR BETTER	83	89	67	78	70	86	79	73	80	80	58	71
NOT REPORTED	0	1	0	0	0	0	0	0	0	0	0	0
DO YOU PLAN TO REENLIST?												
NO, OR PROBABLY NO	54	47	33	33	70	29	33	73	60	51	58	57
YES, OR PROBABLY YES	45	52	67	67	30	71	67	27	40	49	42	29
NOT REPORTED	1	1	0	0	0	0	0	0	0	0	0	14

TABLE 14

SELECTED BACKGROUND DATA FOR SUPERVISORY AND RED HORSE FUNCTIONAL JOB GROUPS

	XXII. PLANT AND SECTION SUPERVISORS					XXIII.	XXIV. PLUMBING PLANNERS		XXV.
	STRUCTURAL MAINTENANCE AND REPAIR MANAGERS	*PLUMBING* SECTION SUPERVISORS	SANITATION SUPERINTENDENTS	WATER PLANT AND SWIMMING POOL MANAGERS	WASTE AND WATER PLANT NCOICs	QUALITY CONTROL AND SYSTEMS INSPECTORS	PLUMBING INSTALLATION PLANNERS	PLUMBING REQUIREMENTS PLANNERS	ENVIRONMENTAL SUPPORT RED HORSE PERSONNEL
NUMBER IN GROUP	11	31	27	10	11	8	7	11	11
PERCENT OF SAMPLE	1%	2%	1%	1%	*	1%	1%	*	1%
PERCENT IN CONUS	55%	55%	78%	60%	27%	100%	71%	36%	100%
MAJCOM DISTRIBUTION:									
AAC	0%	7%	0%	20%	18%	0%	14%	9%	0%
ADCOM	0%	3%	7%	0%	0%	0%	0%	0%	0%
ATC	9%	16%	15%	10%	0%	0%	0%	0%	9%
MAC	27%	16%	7%	0%	9%	12%	0%	9%	9%
PACAF	0%	23%	11%	10%	0%	0%	14%	9%	0%
SAC	9%	10%	30%	20%	0%	88%	14%	18%	0%
TAC	18%	10%	11%	20%	18%	0%	43%	18%	72%
USAFE	27%	10%	4%	10%	46%	0%	14%	9%	0%
OTHER	10%	5%	15%	10%	9%	0%	0%	28% (AFSC)	0%
DAFSC DISTRIBUTION:									
55255	18%	6%	4%	0%	0%	13%	14%	9%	0%
55275	82%	84%	0%	0%	0%	13%	86%	91%	0%
56651	0%	0%	11%	20%	36%	13%	0%	0%	64%
56671	0%	0%	82%	80%	55%	61%	0%	0%	27%
OTHER	0%	10%	3%	0%	9%	0%	0%	0%	9%
AVERAGE GRADE	6.1	6.1	6.4	5.7	5.3	5.4	5.9	5.7	4.4
AVERAGE MONTHS IN CAREER FIELD	163	162	178	168	141	123	175	143	60
AVERAGE MONTHS IN SERVICE	188	179	189	172	144	126	193	159	61
AVERAGE NUMBER OF TASKS PERFORMED	63	84	94	118	70	41	16	36	31

* INDICATES LESS THAN .5 PERCENT BUT GREATER THAN ZERO

TABLE 15

JOB SATISFACTION FOR SUPERVISORY AND RED HORSE FUNCTIONAL JOB GROUPS

	XXII. PLANT AND SECTION SUPERVISORS					XXIII.	XXIV. PLUMBING PLANNERS		XXV.
	STRUCTURAL MAINTENANCE AND REPAIR MANAGERS	PLUMBING SECTION SUPERVISORS	SANITATION SUPERINTENDENTS	WATER PLANT AND SWIMMING POOL MANAGERS	WASTE AND WATER PLANT NCOICs	QUALITY CONTROL AND SYSTEMS INSPECTORS	PLUMBING INSTALLATION PLANNERS	PLUMBING REQUIREMENTS PLANNERS	ENVIRONMENTAL SUPPORT RED HORSE PERSONNEL
JOB INTEREST:									
DULL	18	7	4	10	18	0	29	27	46
SO-SO	0	16	0	10	18	25	14	0	18
INTERESTING	82	77	96	70	64	75	57	64	36
NOT REPORTED	0	0	0	10	0	0	0	9	0
UTILIZATION OF TALENTS:									
LITTLE OR NOT AT ALL	18	7	4	30	18	25	0	9	73
FAIRLY WELL OR BETTER	82	93	96	70	82	75	100	91	27
NOT REPORTED	0	0	0	0	0	0	0	0	0
UTILIZATION OF TRAINING:									
LITTLE OR NOT AT ALL	46	0	0	10	18	25	0	9	82
FAIRLY WELL OR BETTER	54	100	100	90	82	63	100	91	18
NOT REPORTED	0	0	0	0	0	12	0	0	0
DO YOU PLAN TO REENLIST?									
NO, OR PROBABLY NO	46	39	22	20	9	38	57	27	64
YES, OR PROBABLY YES	54	61	78	80	91	62	43	73	36
NOT REPORTED	0	0	0	0	0	0	0	0	0

ANALYSIS OF DUTY GROUPS

An important aspect of any occupational analysis involves determining the nature of change in the tasks performed as skill level increases. Examination of the tasks performed by DAFSC groups is useful in determining the accuracy and completeness of the career ladder documents (AFR 39-1 specialty descriptions and the Specialty Training Standard).

Environmental Support (DAFSC 566X1)

The nature of the jobs performed by Environmental Support personnel was found to change markedly at the 7-skill level, with 3- and 5-skill level personnel performing roughly equivalent jobs. As Table 16 illustrates, the performance of supervisory and managerial tasks increased as skill level increased while the performance of technical tasks decreased.

DAFSC 56631. The tasks performed by 3-skill level Environmental Support personnel were overwhelmingly technical in nature, with incumbents spending 95 percent of their time on their performance. The few nontechnical tasks performed were performed by less than 15 percent of the members and included general tasks, such as preparing charts and graphs and inventorying tools and equipment. As Table 17 shows, only 23 tasks were performed by 50 percent or more of apprentice Environmental Support specialists. These tasks included custodial tasks, such as cleaning up job sites and waxing vehicles, and general water and waste water plant tasks, such as performing pH and chlorine residual tests, reading and maintaining charts and meters, and adjusting and operating chemical feeders and hypochlorinators.

DAFSC 56651. The tasks performed by 5-skill level personnel were very similar to those commonly performed by 3-skill level airmen. Table 18 presents a listing of representative tasks performed by 5-skill level personnel. Differences in tasks performed between the two skill levels are reflected in Table 19. In general, a larger percentage of Environmental Support specialists maintained valves, pumps, and appurtenances, while a larger percentage of apprentices performed several water and waste water tests.

DAFSC 56671. The 7-skill level personnel performed both supervisory and technical tasks, with incumbents devoting roughly equivalent percentages of time to the performance of each (see Table 20). Environmental Support technicians spent 46 percent of their time on supervision, management, training, and administration tasks and 54 percent on technical tasks and general functions. The technical tasks most performed included tasks commonly performed by 3- and 5-skill level airmen, such as performing pH and chlorine residual tests, and those not performed by apprentices and specialists, such as inspecting safety clothing and equipment and inspecting lift station equipment, piping, and metal tanks. Table 21 presents tasks which best distinguish between 7- and 5-skill level personnel.

TABLE 16

PERCENT TIME SPENT ON DUTIES BY ENVIRONMENTAL SUPPORT DAFSC GROUPS

DUTY	ALL 566X1 (N=758)	DAFSC 56631 (N=106)	DAFSC 56651 (N=488)	DAFSC 56671 (N=156)
A ORGANIZING AND PLANNING	4	1	2	11
B DIRECTING AND IMPLEMENTING	5	1	3	12
C INSPECTING AND EVALUATING	4	1	2	11
D TRAINING	2	*	2	6
E WORKING WITH FORMS, RECORDS, REPORTS, DIRECTIVES, OR TECHNICAL DATA	3	2	3	6
F INSPECTING SYSTEMS	7	5	7	8
G INSTALLING AND REPLACING PIPES, TUBING, FITTINGS, AND APPURTENANCES	4	4	5	4
H MAINTAINING FIXTURES AND EQUIPMENT	*	*	*	*
I MAINTAINING WATER DISTRIBUTION SYSTEMS	2	1	2	1
J MAINTAINING SANITARY WATER AND SEWER SYSTEMS	2	2	2	1
K MAINTAINING VALVES	5	5	5	3
L PERFORMING LABORATORY ANALYSIS OF WATER AND WASTE WATER	11	16	11	7
M OPERATING AND MAINTAINING EQUIPMENT	24	28	27	15
N OPERATING AND MAINTAINING WATER PLANTS AND SWIMMING POOLS	11	14	13	6
O OPERATING AND MAINTAINING WASTE WATER PLANTS	7	10	7	4
P PERFORMING GENERAL FUNCTIONS	9	10	9	5
TOTAL	100	100	100	100

* INDICATES LESS THAN .5 PERCENT BUT GREATER THAN ZERO

TABLE 17

TASKS PERFORMED BY 50 PERCENT OR MORE OF 3-SKILL LEVEL
ENVIRONMENTAL SUPPORT PERSONNEL

TASK	PERCENT MEMBERS PERFORMING (N=106)
PERFORM pH TESTS	91
OPERATE PUMPS	78
PERFORM CHLORINE RESIDUAL TESTS	76
READ METERS OR RECORDING DEVICES	74
WASH OR WAX SHOP VEHICLES	72
REMOVE OR REPLACE CHLORINE CYLINDERS	68
ADD CHEMICALS TO CHEMICAL FEEDERS OR HYPOCHLORINATORS	67
REPACK PUMPS	67
PERFORM HOUSEKEEPING FUNCTIONS	64
MIX CHEMICALS	61
SCRAPE OR PAINT EQUIPMENT OR FACILITIES	60
CLEAN UP JOB SITES	59
POST ENTRIES IN DAILY LOGS	58
CLEAN WATER AND WASTE WATER PLANT EQUIPMENT	58
ADD CHEMICALS TO SWIMMING POOL WATER	57
VISUALLY CHECK CHARTS ON RECORDERS	57
ADJUST CHEMICAL FEEDERS OR HYPOCHLORINATORS	57
CHECK ENCASED MOTOR OIL LEVELS	57
READ INSTALLED METERS, SUCH AS WATER OR GAS METERS	55
COLLECT WATER SAMPLES	55
CHECK ENGINE OIL LEVELS	55
OPERATE MANUAL VALVES	54
CHANGE CHARTS ON RECORDERS	53

TABLE 18

REPRESENTATIVE TASKS PERFORMED BY 5-SKILL LEVEL
ENVIRONMENTAL SUPPORT PERSONNEL

TASK	PERCENT MEMBERS PERFORMING (N=488)
PERFORM pH TESTS	87
OPERATE PUMPS	82
PERFORM CHLORINE RESIDUAL TESTS	77
REPACK PUMPS	73
ADD CHEMICALS TO CHEMICAL FEEDERS OR HYPOCHLORINATORS	72
READ METERS OR RECORDING DEVICES	71
WASH OR WAX SHOP VEHICLES	71
REMOVE OR REPLACE CHLORINE CYLINDERS	69
ADJUST CHEMICAL FEEDERS OR HYPOCHLORINATORS	68
DEMONSTRATE METHODS OF SELF PROTECTION FROM EXTREME WEATHER CONDITIONS	67
SCRAPE OR PAINT EQUIPMENT OR FACILITIES	67
OPERATE MANUAL VALVES	64
ADD CHEMICALS TO SWIMMING POOL WATER	63
PERFORM HOUSEKEEPING FUNCTIONS	62

TABLE 19

TASKS WHICH BEST DIFFERENTIATE 3- AND 5-SKILL LEVEL
ENVIRONMENTAL SUPPORT PERSONNEL

TASK	DAFSC 56631 (N=106)	DAFSC 56651 (N=488)	DIFFERENCE
PERFORM COLOR TESTS	36	23	+13
MIX CHEMICALS	61	52	+9
CLEAN GRIT REMOVAL UNITS	25	16	+9
PERFORM PHENOL TESTS	21	12	+9
PERFORM CHLORIDE TESTS	35	27	+8
PERFORM FLUORIDE TESTS	38	30	+8
VISUALLY CHECK CHARTS ON RECORDERS	57	50	+7
CLEAN AND STERILIZE LABORATORY EQUIPMENT	42	36	+6
PERFORM SETTLEABLE SOLID TESTS	37	31	+6
SKIM GREASE FROM SETTLING TANKS MANUALLY	21	16	+5
REMOVE OR REPLACE WATER METERS	23	36	-13
REMOVE OR REPLACE CIRCULATING PUMPS	18	32	-14
REMOVE OR REPLACE COMPONENTS OF HYPOCHLORINATORS OR CHEMICAL FEEDERS	25	40	-15
WINTERIZE SWIMMING POOLS	18	33	-15
INSPECT SAFETY CLOTHING	14	30	-16
REMOVE OR REPLACE SEWER LIFT PUMPS	31	47	-16
REMOVE OR REPLACE SUMP PUMPS	40	59	-19
INSPECT SAFETY EQUIPMENT	18	38	-20
SUPERVISE APPRENTICE ENVIRONMENTAL SUPPORT SPECIALISTS (AFSC 56631)	6	27	-21
CONDUCT OJT	8	30	-22

TABLE 20

REPRESENTATIVE TASKS PERFORMED BY 7-SKILL LEVEL
ENVIRONMENTAL SUPPORT PERSONNEL

TASK	PERCENT MEMBERS PERFORMING (N=156)
COUNSEL SUBORDINATES ON PERSONAL PROBLEMS	81
COUNSEL SUBORDINATES ON WORK PROGRESS	79
PERFORM pH TESTS	78
WRITE AIRMAN PERFORMANCE REPORTS (APRs)	74
INSPECT SAFETY EQUIPMENT	69
OPERATE PUMPS	67
SUPERVISE ENVIRONMENTAL SUPPORT SPECIALISTS (AFSC 56651)	65
EVALUATE MONTHLY LOGS	65
PLAN WORK ASSIGNMENTS	65
PERFORM CHLORINE RESIDUAL TESTS	63
ASSIGN PERSONNEL TO DUTY POSITIONS	63
COUNSEL TRAINEES ON TRAINING PROBLEMS	63
ADJUST CHEMICAL FEEDERS OR HYPOCHLORINATORS	62
INVENTORY EQUIPMENT, TOOLS, OR SUPPLIES	62
ESTABLISH OFFICE INSTRUCTIONS (OI) OR STANDARD OPERATING PROCEDURES (SOP)	62

TABLE 21

TASKS WHICH BEST DIFFERENTIATE 5- AND 7-SKILL LEVEL
ENVIRONMENTAL SUPPORT PERSONNEL

TASK	DAFSC 56651 (N=488)	DAFSC 56671 (N=156)	DIFFERENCE
SCRAPE OR PAINT EQUIPMENT OR FACILITIES	67	47	+20
CLEAN UP JOB SITES	67	49	+18
REPACK PUMPS	73	56	+17
WASH OR WAX SHOP VEHICLES	71	55	+16
OPERATE PUMPS	82	67	+15
REMOVE OR REPLACE SUMP PUMPS	59	45	+14
PERFORM CHLORINE RESIDUAL TESTS	77	63	+14
REMOVE OR REPLACE CHLORINE CYLINDERS	69	56	+13
ADD CHEMICALS TO CHEMICAL FEEDERS OR HYPOCHLORINATORS	72	60	+12
ADD CHEMICALS TO SWIMMING POOL WATER	63	51	+12
EVALUATE MONTHLY LOGS	19	65	-46
COUNSEL TRAINEES ON TRAINING PROBLEMS	16	63	-47
FOLLOW-UP SUPPLY PROBLEMS	13	60	-47
SCHEDULE LEAVES OR PASSES	9	58	-49
ASSIGN SPONSORS FOR NEWLY-ASSIGNED PERSONNEL	11	60	-49
PLAN WORK ASSIGNMENTS	15	65	-50
ESTABLISH OFFICE INSTRUCTIONS (OI) OR STANDARD OPERATING PROCEDURES (SOP)	11	62	-51
WRITE AIRMAN PERFORMANCE REPORTS (APRs)	16	74	-58
COUNSEL SUBORDINATES ON WORK PROGRESS	18	79	-61
COUNSEL SUBORDINATES ON PERSONAL PROBLEMS	20	81	-61

Plumbing (DAFSC 552X5)

The tasks performed by 3- and 5-skill level plumbers were very similar in terms of the percent members of each group performing them and in the amount of time devoted to their performance. As Table 22 illustrates, the job time of 3- and 5-skill level plumbers was spent primarily on technical tasks, which consumed 94 and 91 percent of their time, respectively. The job performed by Plumbing technicians was very different however, and included many tasks not performed by more junior plumbers.

DAFSCs 55235 and 55255. Both apprentice Plumbers and Plumbing specialists performed a wide range of technical plumbing tasks involving faucets, drains, plumbing fixtures, tubes and pipes, valves, and fittings (see Tables 23 and 24). The performance of supervision and management tasks was limited and those nontechnical tasks performed dealt primarily with directing the accomplishment of technical plumbing tasks. Differences between the two skill levels focused on the fact that fewer apprentice plumbers isolated manfunctions in distribution systems; worked with specialized fittings, such as gooseneck and flanged connections; and performed supervision, management, or inspection tasks (see Table 25).

DAFSC 55275. As Table 26 illustrates, the tasks commonly performed by Plumbing technicians were both technical and nontechnical (supervisory, managerial, and administrative) with technicians devoting 53 percent of their time to technical tasks and 47 percent to nontechnical tasks. Compared to 5-skill level plumbers, technicians reported much greater performance of supervision and management tasks dealing with the managing of plumbing shops (see Table 27).

Summary

In both the Environmental Support and Plumbing career ladders, the tasks performed by 3- and 5-skill level personnel within ladders were very similar. It was only at the 7-skill level in each ladder that job content changed significantly. In both career ladders, technical tasks consumed over 50 percent of the total job time, even for 7-skill level personnel.

TABLE 22

PERCENT TIME SPENT PERFORMING DUTIES BY PLUMBING DAFSC GROUPS

DUTY		ALL 552X5 (N=1,049)	DAFSC 55235 (N=158)	DAFSC 55255 (N=687)	DAFSC 55275 (N=202)
A	ORGANIZING AND PLANNING	5	1	3	16
B	DIRECTING AND IMPLEMENTING	4	1	3	12
C	INSPECTING AND EVALUATING	2	1	1	6
D	TRAINING	2	*	1	4
E	WORKING WITH FORMS, RECORDS, REPORTS, DIRECTIVES, OR TECHNICAL DATA	3	1	1	9
F	INSPECTING SYSTEMS	7	6	6	8
G	INSTALLING AND REPLACING PIPES, TUBING, FITTINGS, AND APPURTENANCES	32	38	34	18
H	MAINTAINING FIXTURES AND EQUIPMENT	7	9	8	4
I	MAINTAINING WATER DISTRIBUTION SYSTEMS	7	8	8	5
J	MAINTAINING SANITARY WASTE AND SEWER SYSTEMS	6	8	7	3
K	MAINTAINING VALVES	13	14	14	7
L	PERFORMING LABORATORY ANALYSIS OF WATER AND WASTE WATER	*	*	*	*
M	OPERATING AND MAINTAINING EQUIPMENT	4	5	5	3
N	OPERATING AND MAINTAINING WATER PLANTS AND SWIMMING POOLS	*	*	*	*
O	OPERATING AND MAINTAINING WASTE WATER PLANTS	*	*	*	*
P	PERFORMING GENERAL FUNCTIONS	8	8	9	5
	TOTAL	100	100	100	100

* INDICATES LESS THAN .5 PERCENT BUT GREATER THAN ZERO

TABLE 23

REPRESENTATIVE TASKS PERFORMED BY 3-SKILL LEVEL PLUMBERS

TASKS	PERCENT MEMBERS PERFORMING (N=158)
REMOVE OR REPLACE FAUCETS	88
REAM PIPING	87
OPEN CLOGGED OR RESTRICTED DRAINS USING POWER OPERATED AUGERS	87
OPEN CLOGGED OR RESTRICTED DRAINS USING HAND OPERATED AUGERS	87
ASSEMBLE COPPER TUBING USING SWEAT SOLDERED FITTINGS	85
ASSEMBLE COPPER TUBING USING FLARED FITTINGS	85
REMOVE OR REPLACE COMPONENTS OF FAUCETS	84
ASSEMBLE OR DISASSEMBLE THREADED PIPE FITTINGS	84
ASSEMBLE OR DISASSEMBLE PLASTIC PIPE FITTINGS	84
REMOVE OR REPLACE COMPONENTS OF WATER CLOSET TANK FLOAT VALVES	83
OPEN CLOGGED OR RESTRICTED DRAINS USING VACUUM PRESSURE PLUNGERS	82
REMOVE OR REPLACE COMPONENTS OF FLUSHOMETER VALVES	82
REMOVE OR REPLACE URINALS	82
REMOVE OR REPLACE COMPONENTS OF WATER CLOSET TANK FLUSH VALVES	82
BEND TUBING BY HAND	81
THREAD PIPES USING MOUNTED POWER THREADERS	80
REMOVE OR REPLACE TRAPS	80
REAM TUBING	78
THREAD PIPES USING HAND THREADERS	78
CUT PLASTIC PIPES	77

TABLE 24

REPRESENTATIVE TASKS PERFORMED BY 5-SKILL LEVEL PLUMBERS

TASKS	PERCENT MEMBERS PERFORMING (N=687)
REMOVE OR REPLACE FAUCETS	90
ASSEMBLE COPPER TUBING USING SWEAT SOLDERED FITTINGS	89
BEND TUBING BY HAND	88
REMOVE OR REPLACE SWING JOINTS	87
REMOVE OR REPLACE COMPONENTS OF WATER CLOSET TANK FLOAT VALVES	87
ASSEMBLE OR DISASSEMBLE THREADED PIPE FITTINGS	87
REAM PIPING	86
REMOVE OR REPLACE COMPONENTS OF FAUCETS	86
ASSEMBLE COPPER TUBING USING FLARED FITTINGS	86
OPEN CLOGGED OR RESTRICTED DRAINS USING HAND OPERATED AUGERS	86
REMOVE OR REPLACE URINALS	85
OPEN CLOGGED OR RESTRICTED DRAINS USING POWER OPERATED AUGERS	85
REMOVE OR REPLACE COMPONENTS OF WATER CLOSET TANK FLUSH VALVES	84
REMOVE OR REPLACE COMPONENTS OF FLUSHOMETER VALVES	84
MEASURE PIPE LENGTHS	80

TABLE 25

TASKS WHICH BEST DIFFERENTIATE BETWEEN 3- AND 5-SKILL LEVEL PLUMBERS

TASK	DAFSC 55235 (N=158)	DAFSC 55255 (N=687)	DIFFERENCE
OPEN CLOGGED OR RESTRICTED DRAINS USING VACUUM PRESSURE PLUNGERS	82	76	+6
ASSEMBLE OR DISASSEMBLE PLASTIC PIPE FITTINGS	84	78	+6
ASSEMBLE PLASTIC PIPES USING THREADED JOINTS	56	52	+4
HAND TAMP TRENCHES	34	30	+4
REMOVE OR REPLACE LAWN SPRINKLER HEADS	48	44	+4
REMOVE OR REPLACE SISSION JOINTS	13	9	+4
REMOVE OR REPLACE GOOSENECKS	25	42	-17
DIRECT INSTALLATION AND MAINTENANCE OF INTERIOR WATER DISTRIBUTION SYSTEMS	4	21	-17
DIRECT INSTALLATION AND MAINTENANCE OF SEWER MAINS	7	24	-17
REPACK GLOBE VALVES	43	61	-18
REMOVE OR REPLACE COMPONENTS OF MIXING VALVES	44	62	-18
CONDUCT OJT	3	22	-19
DIRECT BACKFILL OF TRENCHES	27	46	-19
SUPERVISE APPRENTICE PLUMBING SPECIALISTS (AFSC 55235)	4	29	-25

TABLE 26

REPRESENTATIVE TASKS PERFORMED BY 7-SKILL LEVEL PLUMBERS

TASK	PERCENT MEMBERS PERFORMING (N=202)
COUNSEL SUBORDINATES ON PERSONAL PROBLEMS	74
COUNSEL SUBORDINATES ON WORK PROGRESS	71
INSPECT PLUMBING FIXTURES	70
SUPERVISE PLUMBING SPECIALISTS (AFSC 55255)	70
WRITE AIRMAN PERFORMANCE REPORTS (APRs)	63
COORDINATE WORK PROGRAMS WITH STRUCTURAL SUPERINTENDENTS	63
REAM PIPING	63
COORDINATE WITH WORK CONTROL SECTIONS ON WORK SCHEDULES	63
MEASURE PIPE LENGTHS	62
REMOVE OR REPLACE FAUCETS	61
REMOVE OR REPLACE COMPONENTS OF WATER CLOSET TANK FLOAT VALVES	61
OPEN CLOGGED OR RESTRICTED DRAINS USING POWER OPERATED AUGERS	61
ASSEMBLE COPPER TUBING USING SWEAT SOLDERED FITTINGS	61
REMOVE OR REPLACE URINALS	61
COORDINATE WITH PLANNING SECTIONS ON WORK REQUIREMENTS	60

TABLE 27

TASKS WHICH BEST DIFFERENTIATE BETWEEN 5- AND 7-SKILL LEVEL PLUMBERS

TASK	DAFSC 55235 (N=158)	DAFSC 55255 (N=687)	DIFFERENCE
REMOVE OR REPLACE COMPONENTS OF FAUCETS	86	57	+29
ASSEMBLE OR DISASSEMBLE PLASTIC PIPE FITTINGS	87	58	+29
REMOVE OR REPLACE FAUCETS	90	61	+29
ASSEMBLE COPPER TUBING USING FLARED FITTINGS	86	58	+28
BEND TUBING BY HAND	88	60	+28
ASSEMBLE COPPER TUBING USING SWEAT SOLDERED FITTINGS	89	61	+28
REMOVE OR REPLACE TRAPS	87	60	+27
CLEAN OR LUBRICATE HAND TOOLS	71	44	+27
REMOVE OR REPLACE COMPONENTS OF FLUSHOMETER VALVES	84	57	+27
OPEN CLOGGED OR RESTRICTED DRAINS USING VACUUM PRESSURE PLUNGERS	76	50	+26
ASSIGN SPONSORS FOR NEWLY-ASSIGNED PERSONNEL	10	53	-43
COORDINATE WITH WORK CONTROL SECTIONS ON WORK SCHEDULES	19	63	-44
FOLLOW-UP SUPPLY PROBLEMS	13	58	-45
PLAN WORK ASSIGNMENTS	15	60	-45
WRITE AIRMAN PERFORMANCE REPORTS (APRs)	17	63	-46
SCHEDULE LEAVES OR PASSES	9	57	-48
COORDINATE WORK PROGRAMS WITH STRUCTURAL SUPERINTENDENTS	13	63	-50
COUNSEL SUBORDINATES ON WORK PROGRESS	19	71	-52
COUNSEL SUBORDINATES ON PERSONNEL PROBLEMS	19	74	-55
SUPERVISE PLUMBING SPECIALISTS (AFSC 55255)	18	70	-52

ANALYSIS OF AFMS GROUPS

Tasks performed by members of the various enlistment groups were compared to determine how job content varied as a function of Total Active Federal Military Service (TAFMS). In both the Environmental Support and Plumbing career ladders, similar trends in tasks performed were noted. In each ladder, as TAFMS time increased, the relative time spent performing technical tasks decreased and the time spent performing supervision, management, and training tasks increased.

Environmental Support (566X1)

Through the fourth enlistment (145-192 months TAFMS), Environmental Support personnel spent more time performing technical tasks than supervision, management, training, and administration tasks. As shown in Table 28, the time spent performing nontechnical tasks (Duties A-E) was least in the first enlistment (six percent) and rose to 72 percent for individuals with over 240 months TAFMS. Individuals in the fifth and subsequent enlistments devoted more time to performing supervision, management, training, and administration tasks than to technical tasks.

First Job Assignment (1-24 Months TAFMS). Personnel in their first job assignment performed primarily technical tasks, spending 96 percent of their time on these tasks. A core of 26 common technical and custodial tasks was identified that were performed by over 50 percent of the first job incumbents (see Table 29). These core tasks were broad, generalized tasks that were related to the operation of water and sewage plants and swimming pools. These tasks included performing pH and chlorine residual tests, operating and maintaining pumps, working with chlorine and chemical feeders, and monitoring meters and recording devices. Tasks performed by less than half the first job incumbents were related specifically to either sewage treatment, water supply, or swimming pool operations. Compared to airmen with 25-48 months TAFMS, first job airmen spent less time maintaining equipment, but devoted more time analyzing water and waste water (see Table 30).

Four job groups were identified that contained large percentages of airmen in their first job assignment: Water Treatment Personnel (GRP232) with 53 percent, Missile Water Section Personnel (GRP362) with 47 percent, Sewage Plant Operators (GRP102) with 46 percent, and Swimming Pool Operators (GRP136) with 42 percent. The equipment maintained by first job personnel is illustrated in Table 31.

Plumbing (552X5)

Plumbers performed primarily technical tasks through the fourth-enlistment (145-192 months TAFMS). While there was an increase in supervision, management, and training tasks performed as TAFMS time increased, the tasks commonly performed by personnel in the first three enlistments were very similar. It was not until the fourth enlistment that large percentages of plumbers performed supervision and management tasks.

TABLE 28

PERCENT TIME SPENT PERFORMING DUTIES BY AFMS GROUPS
ENVIRONMENTAL SUPPORT PERSONNEL

DUTY	TAFMS TIME (MONTHS) 1-24 (N=214)	25-48 (N=196)	1-48 (N=410)	49-96 (N=95)	97-144 (N=125)	145-192 (N=54)	193-240 (N=57)	241+ (N=13)
A ORGANIZING AND PLANNING	1	1	1	3	6	10	13	23
B DIRECTING AND IMPLEMENTING	1	2	1	5	8	11	13	17
C INSPECTING AND EVALUATING	1	1	1	3	6	8	12	18
D TRAINING	*	1	1	2	5	6	5	6
E WORKING WITH FORMS, RECORDS, REPORTS, DIRECTIVES, OR TECHNICAL DATA	2	2	2	4	4	5	6	8
F INSPECTING SYSTEMS	6	7	7	8	7	7	8	6
G INSTALLING AND REPLACING PIPES, TUBING, FITTINGS, AND APPURTENANCES	4	5	4	5	4	4	3	2
H MAINTAINING FIXTURES AND EQUIPMENT	*	*	*	*	*	*	*	*
I MAINTAINING WATER DISTRIBUTION SYSTEMS	2	2	2	1	1	2	1	1
J MAINTAINING SANITARY WASTE AND SEWER SYSTEMS	2	2	2	2	2	1	1	*
K MAINTAINING VALVES	5	6	5	4	4	4	3	1
L PERFORMING LABORATORY ANALYSIS OF WATER AND WASTE WATER	15	10	13	11	10	7	8	3
M OPERATING AND MAINTAINING EQUIPMENT	28	28	28	24	21	16	14	10
N OPERATING AND MAINTAINING WATER PLANTS AND SWIMMING POOLS	14	13	14	13	9	8	7	2
O OPERATING AND MAINTAINING WASTE WATER PLANTS	9	8	9	7	6	6	2	1
P PERFORMING GENERAL FUNCTIONS	10	11	10	8	7	5	4	2
TOTAL	100	100	100	100	100	100	100	100

* *INDICATES LESS THAN .5 PERCENT BUT GREATER THAN ZERO*

TABLE 29

REPRESENTATIVE TASKS PERFORMED BY FIRST-TERM
ENVIRONMENTAL SUPPORT PERSONNEL

TASK	PERCENT MEMBERS PERFORMING (N=214)
PERFORM pH TESTS	90
OPERATE PUMPS	80
PERFORM CHLORINE RESIDUAL TESTS	78
READ METERS OR RECORDING DEVICES	75
WASH OR WAX SHOP VEHICLES	70
ADD CHEMICALS TO CHEMICAL FEEDERS OR HYPOCHLORINATORS	68
REMOVE OR REPLACE CHLORINE CYLINDERS	68
REPACK PUMPS	67
SCRAPE OR PAINT EQUIPMENT OR FACILITIES	65
ADJUST CHEMICAL FEEDERS OR HYPOCHLORINATORS	63
CLEAN UP JOB SITES	61
OPERATE MANUAL VALVES	61
ADD CHEMICALS TO SWIMMING POOL WATER	60
PERFORM HOUSEKEEPING FUNCTIONS	60
MIX CHEMICALS	60
CLEAN WATER AND WASTE WATER PLANT EQUIPMENT	[illegible]
CHECK ENGINE OIL LEVELS	56
POST ENTRIES IN DAILY LOGS	56
CHECK ENCASED MOTOR OIL LEVELS	55
READ INSTALLED METERS, SUCH AS WATER OR GAS METERS	54
VISUALLY CHECK CHARTS ON RECORDERS	54
COLLECT WATER SAMPLES	53
CHANGE CHARTS ON RECORDERS	51
OPERATE ELECTRIC MOTORS	51
CLEAN CHEMICAL FEEDERS	50
CLEAN SWIMMING POOL HAIR CATCHERS	50

TABLE 30

WATER AND WASTE WATER TESTS PERFORMED BY OVER 30 PERCENT OF FIRST JOB 566X1 PERSONNEL
(1-24 MONTHS TAFMS)

TEST	PERCENT MEMBERS PERFORMING (N=214)	TRAINING EMPHASIS (AVG=2.42)
pH	90	5.93
CHLORINE RESIDUAL	78	5.79
ALKALINITY	45	5.17
ACIDITY	40	5.17
BIOCHEMICAL OXYGEN DEMAND	39	6.24
DISSOLVED OXYGEN	36	6.12
COLOR	33	3.93
SETTLEABLE SOLIDS	32	4.52
FLUORIDE	31	5.33
CHLORIDE	31	4.38

TABLE 31

EQUIPMENT USED BY OVER 30 PERCENT OF FIRST JOB ENVIRONMENTAL SUPPORT PERSONNEL (1-24 MONTHS TAFMS)

EQUIPMENT	PERCENT MEMBERS USING (N=214)
LABORATORY EQUIPMENT	
CHLORINE COMPARATORS	77
pH COMPARATORS	74
ELECTRIC pH METERS	47
SAMPLERS	42
ANALYTICAL BALANCES	34
MUFFLE FURNACES	30
INCUBATORS	30
PUMP EQUIPMENT	
CENTRIFUGAL	87
SUMP	66
DIAPHRAGM	56
CHEMICAL FEEDERS	
SOLUTION	67
GAS	58
VALVES	
GATE	96
CHECK	95
GLOBE	80
PRESSURE REGULATING	55
ALTITUDE	36
PLUG	36
TREATMENT EQUIPMENT	
DRYING BEDS	41
SAND FILTERS	36
SETTLING TANKS	36
SCREENS/SHREDDERS	35
DIGESTERS	34
DIATOMACEOUS FILTERS	33
AERATORS	31
MISCELLANEOUS TOOLS	
DUAL BED DEMINERALIZERS	31
PRESSURE/SQUARE INCH GAUGES	30

In the fifth and subsequent enlistments plumbers spent more time performing supervision, management, training and administration tasks than technical tasks (see Table 32).

First Job Assignment (1-24 Months TAFMS). The tasks commonly performed by plumbers in their first job assignment differed very little from those performed by plumbers with 25-48 months TAFMS. First job plumbers commonly removed and replaced faucets and faucet components, unclogged restricted drains using a variety of methods, maintained valves and plumbing fixtures; threaded and installed pipes; and maintained exterior water distribution systems (see Table 33).

The largest number of first job plumbers was found in the General Plumber job group (GRP386, N=699); however, the job group with the highest percentage of first job personnel was the Red Horse Plumbers, (GRP342, N=11).

As Table 34 illustrates, plumbers in their first job assignment operated and maintained a wide variety of tools and equipment.

TABLE 32

PERCENT TIME SPENT ON DUTIES BY AFMS GROUPS
PLUMBERS

DUTY	TAFMS TIME (MONTHS) 1-24 (N=326)	25-48 (N=246)	1-48 (N=572)	49-96 (N=172)	97-144 (N=153)	145-192 (N=61)	193-240 (N=77)	241+ (N=14)
A ORGANIZING AND PLANNING	1	2	2	4	8	14	20	18
B DIRECTING AND IMPLEMENTING	1	2	2	4	7	10	14	11
C INSPECTING AND EVALUATING	1	1	1	1	3	5	8	6
D TRAINING	*	*	*	2	2	5	5	5
E WORKING WITH FORMS, RECORDS, REPORTS, DIRECTIVES, OR TECHNICAL DATA	1	1	1	3	5	7	11	10
F INSPECTING SYSTEMS	6	6	6	7	8	9	7	9
G INSTALLING AND REPLACING PIPES, TUBING, FITTINGS, AND APPURTENANCES	37	36	37	32	27	21	16	16
H MAINTAINING FIXTURES AND EQUIPMENT	8	8	8	7	6	5	3	5
I MAINTAINING WATER DISTRIBUTION SYSTEMS	8	8	8	7	6	5	4	6
J MAINTAINING SANITARY WASTE AND SEWER SYSTEMS	8	7	7	7	5	4	2	2
K MAINTAINING VALVES	15	16	15	13	12	8	4	5
L PERFORMING LABORATORY ANALYSIS OF WATER AND WASTE WATER	*	*	*	*	*	*	*	0
M OPERATING AND MAINTAINING EQUIPMENT	5	4	5	5	4	2	2	2
N OPERATING AND MAINTAINING WATER PLANTS AND SWIMMING POOLS	*	*	*	*	*	*	*	*
O OPERATING AND MAINTAINING WASTE WATER PLANTS	*	*	*	*	*	*	*	0
P PERFORMING GENERAL FUNCTIONS	9	9	8	8	7	5	4	5
TOTAL	100	100	100	100	100	100	100	100

* INDICATES LESS THAN .5 PERCENT BUT GREATER THAN ZERO

TABLE 33

REPRESENTATIVE TASKS PERFORMED BY FIRST JOB
PLUMBERS
(1-24 MONTHS TAFMS)

TASK	PERCENT MEMBERS PERFORMING (N=326)
REMOVE OR REPLACE FAUCETS	92
OPEN CLOGGED OR RESTRICTED DRAINS USING HAND OPERATED AUGERS	90
REAM PIPING	90
ASSEMBLE COPPER TUBING USING SWEAT SOLDERED FITTINGS	90
ASSEMBLE OR DISASSEMBLE THREADED PIPE FITTINGS	88
OPEN CLOGGED OR RESTRICTED DRAINS USING POWER OPERATED AUGERS	88
ASSEMBLE COPPER TUBING USING FLARED FITTINGS	88
BEND TUBING BY HAND	87
REMOVE OR REPLACE COMPONENTS OF FAUCETS	87
REMOVE OR REPLACE COMPONENTS OF WATER CLOSET TANK FLOAT VALVES	86
ASSEMBLE OR DISASSEMBLE PLASTIC PIPE FITTINGS	86
REMOVE OR REPLACE URINALS	85
REMOVE OR REPLACE COMPONENTS OF WATER CLOSET TANK FLUSH VALVES	84
MEASURE PIPE LENGTHS	84
REMOVE OR REPLACE COMPONENTS OF FLUSHOMETER VALVES	84
OPEN CLOGGED OR RESTRICTED DRAINS USING VACUUM PRESSURE PLUNGERS	83
CLEAN UP JOB SITES	81
THREAD PIPES USING MOUNTED POWER THREADERS	81
REMOVE OR REPLACE DOMESTIC LAVATORIES	81
REAM TUBING	80

TABLE 34

VARIOUS TYPES OF EQUIPMENT USED BY OVER 30 PERCENT OF FIRST JOB PLUMBERS (1-24 MONTHS TAFMS)

EQUIPMENT	PERCENT MEMBERS USING (N=326)
PUMP EQUIPMENT	
DIAPHRAGM	76
PLUNGER	74
CENTRIFUGAL	65
SUMP	65
VALVES	
GATE	97
GLOBE	95
CHECK	94
PRESSURE REGULATING	68
PLUG	50
FLOW PREVENTION	32
TOOLS	
PIPE VISES	89
HAND DRAIN AUGERS	88
VACUUM PLUNGERS	85
POWER SEWER AUGERS	84
PROPANE TORCHES	84
POWER DRAIN AUGERS	84
BENCH THREADERS	82
ACETYLENE TORCHES	79
CHAIN CUTTERS	78
SNAP CUTTERS	76
GEARED PIPE THREADERS	76
PORTABLE THREADERS	76
BENCH GRINDERS	76
HAND SEWER AUGERS	76
STEEL RIBBON TAPE SNAKES	62
MACHINIST VISES	61
PRESSURE PLUNGERS	60
PROBING RODS	59
STATIONARY THREADERS	55
CHAIN WRENCHES	52
MELTING FURNACES	49
ELECTRIC METAL PIPE LOCATORS	45
BLOW TORCHES	43
OXYACETYLENE TORCHES	36
MUELLER WATER MAIN SELF-TAPPING MACHINE	34
PRESSURE/SQUARE INCH GAUGES	31

COMPARISON OF CONUS/OVERSEAS GROUPS

The tasks performed by personnel located at CONUS installations were compared to those performed by individuals located overseas to determine whether job content varied as a function of geographic location. In both the Environmental Support and Plumbing career ladders, the tasks performed were virtually identical for incumbents regardless of duty location. Some minor variations in the tasks performed were identified however.

Environmental Support (AFS 566X1)

Compared to overseas personnel, CONUS 566X1 personnel reported spending slightly more time operating and maintaining waste water plants and performing laboratory analysis of water and waste water. Additionally, a higher percentage of CONUS respondents performed alkalinity and acidity tests and maintained charts, meters, and recorders, as illustrated in Table 35.

Plumbing (AFS 552X5)

The differences between CONUS and overseas plumbers were extremely minute, with groups devoting nearly equal time to performing identical tasks. Table 36 illustrates the differences identified in tasks performed by CONUS and overseas plumbers.

TABLE 35

TASKS PERFORMED BY OVER 30 PERCENT OF CONUS 56651s
BUT NOT BY THOSE OVERSEAS

TASK	PERCENT MEMBERS PERFORMING		
	CONUS (N=374)	OVERSEAS (N=112)	DIFFERENCE
VISUALLY CHECK INK LEVELS ON RECORDERS	54	12	42
CHANGE CHARTS ON RECORDERS	60	21	39
VISUALLY CHECK CHARTS ON RECORDERS	59	22	37
PERFORM ACIDITY TESTS	41	15	26
PERFORM ALKALINITY TESTS	43	18	25
REMOVE OR REPLACE WATER CONSUMPTION RECORDING CHARTS FROM METERS	32	9	23
WINTERIZE SWIMMING POOLS	39	16	23

TABLE 36

TASKS PERFORMED BY OVER 30 PERCENT OF CONUS 55255s
BUT NOT BY THOSE OVERSEAS

TASK	PERCENT MEMBERS PERFORMING		
	CONUS (N=530)	OVERSEAS (N=152)	DIFFERENCE
CLEAN DEBRIS FROM LAWN SPRINKLER HEADS	40	17	23
REMOVE OR REPLACE SUMP PUMPS	49	26	23
REMOVE OR REPLACE CIRCULATING PUMPS	45	27	18
REMOVE OR REPLACE VALVES USING MECHANICAL JOINTS	40	24	16
ASSEMBLE PLASTIC DRAINAGE FIELD PIPES	33	20	13
APPLY CORROSION PREVENTATIVE WRAPPINGS TO PIPES	35	23	12
THAW FROZEN WATER PIPES USING BUILDING HEATING SYSTEMS	38	27	11
REMOVE OR REPLACE INDUSTRIAL ICE MAKERS	31	20	11
THAW DRAINAGE SYSTEMS USING TORCHES	31	20	11
LUBRICATE BURIED GATE VALVES	35	24	11

ANALYSIS OF EQUIPMENT MAINTAINED

A secondary purpose of this occupational survey was the identification of equipment maintained by members of the two specialties. Tables 37, 38, and 39 identify the equipment and tools used by both specialties in common, and by the members of each ladder uniquely.

As Table 37 shows, very little equipment was operated or maintained by both Environmental Support and Plumbing personnel. Only certain pumps (diaphragm, sump, and centrifugal) and valves (gate, globe, check, plug, and pressure regulating) were maintained commonly by members of both specialties.

The lists of equipment that were used primarily by one specialty or the other were much longer. Environmental Support personnel used lab equipment, demineralizers, chemical feeders, and water and waste treatment equipment that plumbers did not use (see Table 38). Conversely, Plumbers used many various hand and power tools that were not used by Environmental Support personnel. Table 39 lists equipment used mainly by plumbers.

Summary

Of all the various kinds of equipment used by members of the two specialities, very few were maintained or operated in common. There is commonality in the use of three types of pumps and five types of valves. On the other hand, many more types of equipment were used primarily by members of a particular specialty.

TABLE 37

EQUIPMENT USED JOINTLY BY
PLUMBING AND ENVIRONMENTAL SUPPORT PERSONNEL
(PERCENT MEMBERS USING)

EQUIPMENT	PLUMBERS (N=1,049)	ENVIRONMENTAL SUPPORT (N=758)
PUMPS		
DIAPHRAGM	74	55
SUMP	64	69
CENTRIFUGAL	62	88
VALVES		
GATE	94	93
GLOBE	92	73
CHECK	89	91
PRESSURE REGULATING	68	52
PLUG	54	39

TABLE 38

EQUIPMENT USED PRIMARILY BY
ENVIRONMENTAL SUPPORT PERSONNEL
(PERCENT MEMBERS USING)

EQUIPMENT	ENVIRONMENTAL SUPPORT (N=758)	PLUMBERS (N=1,049)
LAB EQUIPMENT		
ANALYTICAL BALANCES	33	*
CHLORINE COMPARATORS	79	1
ELECTRIC pH METERS	46	*
INCUBATORS	31	*
pH COMPARATORS	73	*
SAMPLERS	33	*
DEMINERALIZERS		
DUAL BED	31	*
CHEMICAL FEEDERS		
GAS	62	2
SOLUTION	70	3
VALVES		
ALTITUDE	41	8
TREATMENT EQUIPMENT		
DIATOMACEOUS FILTERS	32	0
DIGESTERS	31	1
DRYING BEDS	41	1
SAND FILTERS	38	3
SCREENS/SHREDDERS	33	2
SETTLING TANKS	36	3

* INDICATES LESS THAN ONE PERCENT

TABLE 39

EQUIPMENT USED PRIMARILY BY
PLUMBERS
(PERCENT MEMBERS USING)

EQUIPMENT	PLUMBERS (N=1,049)	ENVIRONMENTAL SUPPORT (N=758)
PUMPS		
PLUNGER	55	11
VALVES		
FLOW PREVENTION	35	23
MISCELLANEOUS TOOLS AND EQUIPMENT		
ACETYLENE TORCHES	71	6
BACK HOES	30	5
BENCH GRINDERS	76	20
BENCH THREADERS	81	8
BLOW TORCHES	46	6
CHAIN CUTTERS	76	6
CHAIN WRENCHES	54	14
ELECTRIC METAL PIPE LOCATORS	47	8
ELECTRONIC GAS LEAK LOCATORS	30	3
GEARED PIPE THREADERS	70	7
HAND DRAIN AUGERS	87	2
HAND SEWER AUGERS	77	2
MACHINIST VISES	59	18
MELTING FURNACES	50	1
MUELLER MAIN TAPPING MACHINES	38	1
OXYACETYLENE TORCHES	35	1
PIPE VISES	86	27
PORTABLE THREADERS	72	13
POWER DRAIN AUGERS	82	0
POWER SEWER AUGERS	80	1
PRESSURE PER SQUARE INCH GAUGES	30	29
PROBING RODS	55	10
PROPANE TORCHES	81	17
SNAP CUTTERS	70	2
STATIONARY THREADERS	50	2
STEEL RIBBON TAPE SNAKES	59	2
VACUUM PLUNGERS	75	1

TASK FACTOR AND TRAINING ANALYSIS

Several factors are valuable in examining training programs for relevancy of material and course coverage. Occupational survey data, such as percent of first-job and first-term airmen performing tasks and percentages of incumbents using equipment, are valuable in this review. Additionally, task difficulty and training emphasis data are important. These factors are collected using separate questionnaires which are administered to selected 7-skill level NCOs and which reflect relative task difficulty and recommended training emphasis for all tasks in the job inventory.

These factors were used in evaluating the career ladder documents: AFR 39-1, the Specialty Training Standard (STS), and the Plan of Instruction (POI). This section will examine the task factors and their use in determining the coverage of the career ladder documents.

Training Emphasis

Plumbing Specialty. Table 40 lists the tasks that were rated highest in recommended training emphasis for first enlistment plumbers. These highly rated tasks dealt with assembling copper, threaded, and plastic pipe fittings; opening restricted drains with power and hand operated augers; removing and replacing faucets and components of flushometer and water closet tank flush and float valves; and calculating desired fall per foot of piping. These tasks were performed by very large percentages of first job and first enlistment personnel as well as by the majority of more experienced plumbers.

The tasks rated low in recommended training emphasis were generally environmental support tasks and supervisory and management tasks. Also rated low were tasks dealing with the removal and replacement of well, sewer lift, and deep well pumps, and such special appliances as domestic clothes washing machines and bidets.

Environmental Support Specialty. The tasks rated highest in training emphasis by senior Environmental Support personnel were related primarily to cleaning and maintaining sewage and water plant equipment, performing basic water and sewage tests, and adding chemicals to water and feeders (see Table 41). Because the Environmental Support ladder is composed of many diverse job groups, some tasks were performed by less than 30 percent of first job personnel. While these highly rated tasks require formalized training, the low percentage of first job and first term airmen performing some of them indicates that these tasks might be best taught in OJT instead of the technical training school.

The tasks rated lowest in recommended training emphasis by Environmental Support technicians dealt generally with supervision, management, and training, and also with plumbing tasks, such as installing and maintaining pipes, fixtures, and appurtenances.

TABLE 40

PLUMBING TASKS RATED HIGHEST IN TRAINING EMPHASIS
(AFSC 552X5)

TASK	TRAINING EMPHASIS*	PERCENT PERFORMING	
		FIRST JOB	FIRST-TERM
ASSEMBLE COPPER TUBING USING SWEAT SOLDERED FITTINGS	6.19	90	89
ASSEMBLE COPPER TUBING USING FLARED FITTINGS	5.52	88	88
CALCULATE DESIRED FALL PER FOOT OF PIPING	5.44	58	58
ASSEMBLE OR DISASSEMBLE THREADED PIPE FITTINGS	5.42	88	88
OPEN CLOGGED OR RESTRICTED DRAINS USING POWER OPERATED AUGERS	5.37	88	87
DISASSEMBLE OR ASSEMBLE FIRE HYDRANTS	5.25	63	63
ASSEMBLE COPPER TUBING USING FERRULED FITTINGS	5.23	77	79
REMOVE OR REPLACE WATER HEATERS	5.21	72	69
ASSEMBLE OR DISASSEMBLE PLASTIC PIPE FITTINGS	5.15	86	82
THAW FROZEN WATER PIPES USING ELECTRICAL PIPE THAWERS	5.10	37	38
REMOVE OR REPLACE COMPONENTS OF WATER CLOSET TANK FLOAT VALVES	5.10	86	87
REMOVE OR REPLACE COMPONENTS OF WATER CLOSET TANK FLUSH VALVES	5.06	84	84
INSTALL PLUMBING FIXTURES IN RENOVATED STRUCTURES	5.04	64	63
REMOVE OR REPLACE COMPONENTS OF FLUSHOMETER VALVES	5.04	84	84
REMOVE OR REPLACE FAUCETS	5.04	92	91
THREAD PIPES USING MOUNTED POWER THREADERS	5.02	81	81
OPEN CLOGGED OR RESTRICTED DRAINS USING HAND OPERATED AUGERS	5.02	91	88

* AVERAGE TRAINING EMPHASIS = 1.71

TABLE 41

ENVIRONMENTAL SUPPORT TASKS RATED HIGHEST IN TRAINING EMPHASIS
(AFS 566X1)

TASK	TRAINING EMPHASIS*	PERCENT PERFORMING	
		FIRST JOB	FIRST-TERM
CLEAN WATER AND WASTE WATER PLANT EQUIPMENT	6.45	35	43
ADD CHEMICALS TO SWIMMING POOL WATER	6.31	60	64
REMOVE OR REPLACE GAS CHLORINATOR CLEAN VALVES	6.29	32	39
PERFORM BIOCHEMICAL OXYGEN DEMAND (BOD) TESTS	6.24	39	36
MIX CHEMICALS	6.17	60	57
REMOVE OR REPLACE COMPONENTS OF CHLORINATORS EXCLUDING GAS CHLORINATORS	6.14	27	34
ADD CHEMICALS TO WATER PLANTS	6.14	33	34
PERFORM DISSOLVED OXYGEN (DO) TESTS	6.12	36	33
REMOVE OR REPLACE COMPONENTS OF HYPOCHLORINATORS OR CHEMICAL FEEDERS	6.10	29	36
REMOVE OR REPLACE CHLORINE CYLINDERS	6.07	68	71
OPERATE PUMPS	5.95	80	83
PERFORM pH TESTS	5.93	90	89
ADJUST PUMP IMPELLERS	5.93	27	33
REMOVE OR REPLACE SEWER LIFT PUMPS	5.88	36	44
CLEAN HYPOCHLORINATORS	5.88	26	28
POST ENTRIES IN MONTHLY LOGS	5.86	36	40
COLLECT WATER SAMPLES	5.86	53	54
REMOVE OR REPLACE WELL PUMPS	5.83	19	25
PERFORM CHLORINE RESIDUAL TESTS	5.79	77	77
ALIGN PUMPS TO MOTORS	5.76	43	47
INSPECT SANITARY LIFT STATION EQUIPMENT	5.74	35	41
POST ENTRIES IN DAILY LOGS	5.71	56	56
ADJUST CHEMICAL FEEDERS OR HYPOCHLORINATORS	5.71	63	68
REPACK PUMPS	5.71	69	73
PERFORM MAINTENANCE ON SEWAGE LIFT PUMPS	5.69	41	45
ADD CHEMICALS TO CHEMICAL FEEDERS OR HYPOCHLORINATORS	5.69	68	72
CLEAN AND STERILIZE LABORATORY EQUIPMENT	5.50	42	39
TEST WELLS FOR WATER LEVEL DRAW DOWN	5.48	19	25
OPERATE ERDLATORS	5.45	14	14

* AVERAGE TRAINING EMPHASIS = 2.42

Task Difficulty

Plumbing Specialty. As Table 42 shows, the tasks perceived to be most difficult by plumbers were very specialized, technical tasks. These tasks generally dealt with preparing and reviewing working drawings to determine installation procedures, installing water and sewer mains, testing and maintaining interior fire protection systems, and repairing fire hydrants. Table 43 illustrates the tasks seen to be least difficult by plumbers. These tasks were very general in nature and included tasks such as checking engine and battery fluid levels, measuring and cutting pipes, and performing cleaning and custodial tasks.

Environmental Support Specialty. Table 44 lists the tasks that were judged by Environmental Support specialists to be the most difficult. The tasks generally involved very specialized procedures and were not performed by large percentages of 566X1 incumbents. These specialized tasks included planning layouts of facilities, removing chemical warfare or radioactive agents from water, performing special purpose water tests, and setting up and operating erdlators. Table 45 lists the tasks rated low in difficulty. These tasks dealt primarily with operating and maintaining simple equipment found in water and waste plants, such as valves, charts, meters, and recording devices; and engines, motors, and pumps. These tasks were performed by large percentages of environmental support personnel.

TABLE 42

TECHNICAL PLUMBING TASKS RATED HIGHEST IN TASK DIFFICULTY

TASK	TASK DIFFICULTY*
PREPARE WORKING DRAWINGS FOR PLUMBING INSTALLATIONS	7.44
PLAN LAYOUTS OF PLUMBING FACILITIES	7.14
INSPECT CONTRACTOR JOBS	6.66
REVIEW ENGINEERING DRAWINGS OR SPECIFICATIONS TO DETERMINE PLUMBING INSTALLATION METHODS	6.64
DIRECT INSTALLATION AND MAINTENANCE OF WATER MAINS	6.61
DIRECT INSTALLATION AND MAINTENANCE OF SEWER MAINS	6.56
DIRECT INSTALLATION AND MAINTENANCE OF INTERIOR SANITARY WASTE SYSTEMS	6.55
DIRECT INSTALLATION AND MAINTENANCE OF INTERIOR WATER DISTRIBUTION SYSTEMS	6.51
REMOVE OR REPLACE COMMERCIAL DISHWASHERS	6.51
PERFORM HYDROSTATIC TESTS ON INTERNAL FIRE PROTECTION SYSTEMS	6.40
REVIEW WORKING DRAWINGS TO DETERMINE PLUMBING INSTALLATION METHODS	6.38
TEST INTERIOR FIRE PROTECTION SYSTEMS FOR ALARM OPERATION	6.35
RESET CLAPPER VALVE ON INTERIOR FIRE PROTECTION SYSTEMS	6.33
DISASSEMBLE OR ASSEMBLE FIRE HYDRANTS	6.32
REMOVE OR REPLACE FIRE HYDRANTS	6.31
PERFORM HYDROSTATIC TESTS ON PNEUMATIC TANKS	6.27
INSTALL SEPTIC TANKS	6.24
TAP PIPES USING TAPPING MACHINES	6.22
TEST INTERIOR FIRE PROTECTION SYSTEMS FOR FLOW	6.18
ANNOTATE CHANGES IN EQUIPMENT LAYOUT ON BLUEPRINTS	6.06
ISOLATE MALFUNCTIONS IN WATER SYSTEMS TO DETERMINE CAUSES OF LOSS OF PRESSURE	6.06
ISOLATE MALFUNCTIONS IN FIRE HYDRANT CUP ASSEMBLIES	6.04
ISOLATE MALFUNCTIONS IN MAIN VALVE ASSEMBLY OF FIRE HYDRANTS	6.04
REMOVE OR REPLACE BATHTUBS	6.04

* AVERAGE TASK DIFFICULTY IS 5.00, STANDARD DEVIATION IS 1.00

TABLE 43

TECHNICAL PLUMBING TASKS RATED LOWEST IN TASK DIFFICULTY

TASK	TASK DIFFICULTY*
OPEN CLOGGED OR RESTRICTED DRAINS USING VACUUM PRESSURE PLUNGERS	3.53
CHECK ENCASED MOTOR OIL LEVELS	3.43
DRAIN DRIP TRAPS	3.40
CLEAN SEPTIC TANKS	3.38
SCRAPE OR PAINT EQUIPMENT OR FACILITIES	3.36
REMOVE OR REPLACE ELECTRICAL HEATING TAPE ON WATER LINES	3.34
OPERATE MANUAL VALVES	3.33
HAND TAMP TRENCHES	3.29
REMOVE OR REPLACE ELECTRICAL HEATING TAPE ON DRAIN LINES	3.26
WINTERIZE TRAPS	3.26
MEASURE PIPE LENGTHS	3.17
CUT PLASTIC PIPES	3.15
CUT PLASTIC TUBING	3.15
THAW DRAINAGE SYSTEMS USING BUILDING HEATING SYSTEMS	3.02
CLEAN GREASE INTERCEPTORS	2.98
CLEAN DEBRIS FROM LAWN SPRINKLER HEADS	2.94
REMOVE OR REPLACE PARTS OF HAND TOOLS	2.85
PERFORM HOUSEKEEPING FUNCTIONS	2.70
CLEAN UP JOB SITES	2.62
CLEAN OR LUBRICATE HAND TOOLS	2.58
CHECK ENGINE BATTERY WATER LEVELS	2.51
CHECK ENGINE WATER LEVELS	2.44
CHECK ENGINE OIL LEVELS	2.44
POLICE CIVIL ENGINEERING AREAS	2.03
WASH OR WAX SHOP VEHICLES	1.78

* AVERAGE TASK DIFFICULTY IS 5.00, STANDARD DEVIATION IS 1.00

TABLE 44

TECHNICAL ENVIRONMENTAL SUPPORT TASKS RATED HIGHEST IN TASK DIFFICULTY

TASK	TASK DIFFICULTY*
PLAN LAYOUTS OF WASTE WATER PLANTS	8.12
PLAN LAYOUTS OF WATER PLANTS	7.94
REMOVE OR REPLACE DEEP WELL PUMPS	7.44
REMOVE RADIOACTIVE CONTAMINANTS FROM WATER	7.30
CALIBRATE RECORDERS	7.15
REMOVE OR NEUTRALIZE CHEMICAL WARFARE AGENTS IN WATER	7.09
REMOVE OR REPLACE WELL PUMPS	7.08
OPERATE THERMOCOMPRESSION DISTILLATION UNITS	6.98
PERFORM COLIFORM BACTERIOLOGICAL TESTS	6.96
PERFORM CHEMICAL OXYGEN DEMAND (COD) TESTS	6.74
ASSEMBLE OR DISASSEMBLE STACKS ON ELECTRODIALYSIS UNITS	6.74
PREPARE BASE ENGINEERS AUTOMATED MAINTENANCE (BEAM) REPORTS	6.70
ALIGN PUMPS TO MOTORS	6.59
OPERATE ERDLATORS	6.56
SET UP ERDLATORS	6.48
PERFORM RADIOACTIVITY TESTS	6.45
PERFORM BIOCHEMICAL OXYGEN DEMAND (BOD) TESTS	6.43
OPERATE MIXED-BED DEMINERALIZERS	6.43
REMOVE OR REPLACE SEWER LIFT PUMPS	6.33
ALIGN BLOCK BEARINGS TO DRIVE SHAFTS	6.32
OPERATE ELECTRODIALYSIS EQUIPMENT	6.32
INSPECT WATER PLANTS	6.31
OPERATE DUAL-BED DEMINERALIZERS	6.30
PERFORM CYANIDE TESTS	6.23
INSPECT DEEP WELL PUMPS	6.22

* AVERAGE TASK DIFFICULTY IS 5.00, STANDARD DEVIATION IS 1.00

TABLE 45

TECHNICAL ENVIRONMENTAL SUPPORT TASKS RATED LOWEST IN TASK DIFFICULTY

TASK	TASK DIFFICULTY*
OPERATE MANUAL VALVES	3.38
READ METERS OR RECORDING DEVICES	3.38
APPLY PREVENTATIVE COATINGS TO PIPES USING BRUSHES OR MOPS	3.35
POST ENTRIES IN DAILY LOGS	3.32
COVER AND DATE FIELD URINAL PITS	3.32
CHANGE CHARTS ON RECORDERS	3.29
CLEAN TRICKLING FILTER DISTRIBUTION NOZZLES	3.28
DRAIN EXCAVATIONS USING BUCKETS OR CANS	3.26
VISUALLY CHECK ENGINE BELTS	3.19
CLEAN SIDEWALLS ON SEWAGE SETTLING TANKS	3.15
VISUALLY CHECK AIR COMPRESSOR BELTS	3.13
CLEAN SWIMMING POOL HAIR CATCHERS	3.12
READ INSTALLED METERS, SUCH AS WATER OR GAS METERS	3.10
VISUALLY CHECK CHARTS ON RECORDERS	3.05
RECIRCULATE WASTE WATER	3.04
CHECK WATER OR WASTE WATER TEMPERATURES	2.91
REMOVE OR REPLACE WATER CONSUMPTION RECORDING CHARTS FROM METERS	2.87
VISUALLY CHECK INK LEVELS ON RECORDERS	2.69
CLEAN OR LUBRICATE HAND TOOLS	2.68
CHECK ENCASED MOTOR OIL LEVELS	2.63
READ BOILER ROOM TEMPERATURE GAUGES	2.38
RAKE BAR SCREENS	2.28
CHECK ENGINE OIL LEVELS	2.18
CHECK ENGINE WATER LEVELS	2.17
CHECK ENGINE BATTERY WATER LEVELS	2.10
WASH OR WAX SHOP VEHICLES	1.56

* AVERAGE TASK DIFFICULTY IS 5.00, STANDARD DEVIATION IS 1.00

COMPARISON TO CAREER LADDER DOCUMENTS

Plumbing Specialty

AFR 39-1 Specialty Descriptions. Survey data were compared with the specialty descriptions contained in AFR 39-1 for 3-, 5-, and 7-skill level personnel. The specialty descriptions appeared to portray very accurately the major tasks and functions performed by incumbents in each skill level.

STS 552X5. STS 552X5, dated January 1979, was reviewed for 3-, 5-, and 7-skill level personnel. Assistance was provided by subject matter specialists at the Sheppard Technical Training Center, who matched inventory tasks with STS paragraphs. Each of the STS subparagraphs containing task knowledge or performance requirements was compared to the survey results. The STS for the plumbing career ladder appeared very complete in providing general training requirements. The STS paragraphs were supported by the data in terms of percent members performing tasks. Two items for consideration were noted however.

First, STS paragraph 9d deals with inspecting pneumatic systems (exclusive of compressors) for operation. The tasks linked to this item were performed by no more than six percent of the 3-, 5-, and 7-skill level respondents. Subject matter specialists should reexamine this paragraph to determine whether the emphasis placed on this paragraph is warranted.

Second, several tasks were identified that were not linked to specific STS references, but which were performed by large percentages of plumbers and were rated high in recommended training emphasis. These tasks are listed in Table 46, and should be reviewed by subject matter specialists to determine whether they should be included in the STS.

POI 3ABR55235. The Plan of Instruction for the basic Plumbing course at Sheppard was reviewed and is, for the most part, consistent with survey data. Generally, large percentages of first job and first-term plumbers performed tasks that were linked to specific blocks of instruction. Three exceptions were found however. Block I, objective 5E dealt with completing a working drawing. The tasks linked to this unit of instruction were performed by no more than 14 percent of first-term plumbers. Block I, objective 6A dealt with locating plumbing materials in commercial publications. The task linked by subject matter specialists to this unit of instruction was performed by only seven percent of the plumbers in their first enlistment.

The final exception involves Block IV, objective 5A. This POI paragraph concerns work authorization documents, and the plumber's determination of the work to be done, materials required, and work location. The tasks linked to this objective were performed by no more than 13 percent of first-term plumbers and were rated near or below average in recommended training emphasis. These tasks were performed by large percentages of career plumbing technicians however, implying that this objective is more suitable for skilled plumbers than students in the basic course.

In view of the low percent members performing and generally low training emphasis, subject matter specialists should review these blocks and objectives to determine whether the material is appropriate for the resident course.

Environmental Support Specialty

AFR 39-1 Specialty Descriptions. The survey data were compared to AFR 39-1 to determine whether the specialty descriptions accurately portray the major tasks and functions performed by Environmental Support personnel. Generally, the descriptions accurately reflect the career ladder. However, AFR 39-1 includes the mention of solid waste collection, transportation, and disposal as a major function of career ladder incumbents. The survey data indicate that very small percentages of Environmental Support personnel actually perform tasks related to this function, (see Table 47). Further, the specialty description makes no mention of swimming pool operations. A sizeable percentage of Environmental Support personnel operate and maintain swimming pools as evidenced by the data presented in Table 48 and the identification of the Swimming Pool Operators (GRP136, N=94) as a distinct job group.

STS 566X1. The Specialty Training Standard 566X1, dated February 1979, was reviewed for 3-, 5-, and 7-skill level Environmental Support personnel. Subject matter specialists at the Sheppard Technical Training Center assisted by matching inventory tasks to STS items. The STS items were, in most cases, consistent with the survey data. Several items were identified however, which may require review. STS subparagraph 9d lists 32 specific water and waste water tests that environmental support personnel perform. While many of these tests were performed by large percentages of members, other tests were performed by only a fraction of job incumbents (see Table 49). Further, subparagraphs 10d and 10e deal with monitoring, operating, and maintaining water treatment plant equipment. These subparagraphs listed some equipment that very small percentages of environmental support personnel maintained (see Table 50). Conversely, several equipment maintenance tasks were performed by large percentages of Environmental Support personnel but were not linked to specific STS references. Table 51 lists the unmatched tasks and the percent members who performed these tasks. Subject matter specialists should review these STS items and tasks to determine whether changes should be made.

POI 3ABR56631. Subject matter specialists at the Sheppard Technical Training Center matched inventory tasks to blocks and objectives in the Plan of Instruction for the basic Environmental Support course. For the most part, POI blocks and objectives were supported by the data. In two blocks however, very small percentages of first job and first-term airmen performed tasks that had been linked to POI items. Further, some tasks not linked to specific POI items, were rated above average in recommended training emphasis and were performed by over 30 percent of first job and first-term personnel. These tasks and POI references are listed in Tables 52 and 53. As Table 52 shows, many water testing tasks were performed by few incumbents, but were rated above average in recommended training emphasis. This suggests that, while these tasks do require some formal training, perhaps the technical training school is not the proper place to give students the training. It is possible that these tasks can most cost effectively be trained in OJT.

TABLE 46

SELECTED TASKS NOT REFERENCED IN STS 552X5

TASK	TRAINING EMPHASIS*	PERCENT MEMBERS PERFORMING			
		FIRST-TERM (N=572)	3-LEVEL (N=158)	5-LEVEL (N=687)	7-LEVEL (N=202)
REMOVE OR REPLACE WATER HEATERS	5.21	69	63	69	51
REMOVE OR REPLACE INSIDE EMERGENCY SHOWERS	4.71	50	39	53	48
REMOVE OR REPLACE INSIDE EMERGENCY EYE WASHERS	4.60	54	44	57	48
REMOVE OR REPLACE OUTSIDE EMERGENCY EYE WASHER	4.52	41	34	44	42
LOWER PIPE INTO TRENCHES MANUALLY	3.77	59	53	58	47

* AVERAGE TRAINING EMPHASIS IS 1.71

TABLE 47

TASKS RELATED TO SOLID WASTE COLLECTION, TRANSPORTATION AND PROCESSING (ENVIRONMENTAL SUPPORT)

TASK	PERCENT MEMBERS PERFORMING		
	3-LEVEL (N=106)	5-LEVEL (N=488)	7-LEVEL (N=156)
ESTABLISH SOLID WASTE ROUTES AND SCHEDULES	0	2	1
PLAN SOLID WASTE PICKUP ROUTES	1	3	4
DIRECT SANITARY LAND FILL OPERATIONS	0	1	1
DIRECT SOLID WASTE COLLECTIONS	0	2	3
INSPECT SOLID WASTE DISPOSAL CONTRACT MANAGEMENT	1	2	3
INSPECT DISCARDING UNIT CONTAINER STORAGE AREAS	4	3	3
INSPECT DISCARDING UNIT CONTAINERS	5	5	3
INSPECT LOADING OF REFUSE COLLECTION VEHICLES	0	3	4
INSPECT SANITARY LAND FILLS	1	2	3

TABLE 48

COMMONLY PERFORMED SWIMMING POOL OPERATION TASKS
(ENVIRONMENTAL SUPPORT)

TASK	PERCENT MEMBERS PERFORMING		
	3-LEVEL (N=106)	5-LEVEL (N=488)	7-LEVEL (N=156)
ADD CHEMICALS TO SWIMMING POOL WATER	57	63	51
CLEAN SWIMMING POOL HAIR CATCHERS	47	53	42
FILL OR DRAIN SWIMMING POOLS	47	52	46
RECIRCULATE SWIMMING POOLS	45	48	40
WINTERIZE SWIMMING POOLS	18	33	32
DIRECT SWIMMING POOL OPERATIONS	5	20	48

TABLE 49

SELECTED WATER AND WASTE WATER TESTS LISTED IN STS PARAGRAPH 9D
(ENVIRONMENTAL SUPPORT)

STS ITEM	TASK	PERCENT MEMBERS PERFORMING		
		3-LEVEL (N=106)	5-LEVEL (N=418)	7-LEVEL (N=156)
9D(4)	PERFORM CALCIUM HARDNESS TESTS	13	23	19
	PERFORM TOTAL HARDNESS TESTS	21	22	22
9D(10)	PERFORM TOTAL SOLIDS TESTS	19	18	18
9D(12)	PERFORM VOLATILE ACIDS TESTS	2	5	3
9D(15)	PERFORM POLYPHOSPHATE TESTS	4	7	6
9D(16)	PERFORM GREASE TESTS	0	3	5
9D(17)	PERFORM IRON TESTS	9	12	17
9D(19)	PERFORM VOLATILE SOLIDS TESTS	19	15	15
9D(20)	PERFORM COLIFORM BACTERIOLOGICAL TESTS	6	8	6
9D(21)	PERFORM COLOR TESTS	6	8	6
9D(23)	PERFORM CHEMICAL OXYGEN DEMAND (COD) TESTS	9	11	11
9D(25)	PERFORM TURBIDITY TESTS	12	10	10
9D(26)	PERFORM ODOR TESTS	6	2	5
	PERFORM ODOR TESTS ON WASTE AND VENT SYSTEMS	2	3	3
	PERFORM TASTE TESTS	6	3	3

TABLE 50

EQUIPMENT LISTED IN STS 566X1 WHICH ARE MAINTAINED BY LOW PERCENTAGES OF ENVIRONMENTAL SUPPORT PERSONNEL (PARAGRAPHS 10D, 10E)

STS ITEM	TASK	PERCENT MEMBERS PERFORMING 3-LEVEL (N=106)	5-LEVEL (N=488)	7-LEVEL (N=156)
10D(2)				
	OPERATE RAPID MIX TANKS	9	6	3
	OPERATE SLOW MIX TANKS	6	3	1
10D(3)				
	REMOVE IRON FROM WATER	12	13	10
	REMOVE MANGANESE FROM WATER	5	4	2
10D(4)				
	OPERATE COLD PROCESS SOFTENERS	3	4	2
	ADJUST TEMPERATURES ON HOT PROCESS SOFTENERS	2	2	1
10D(5)				
	OPERATE ELECTRODIALYSIS EQUIPMENT	4	5	5
10D(6)				
	OPERATE REVERSE OSMOSIS UNITS	2	3	2
	REMOVE MANGANESE FROM WATER	5	4	2
10D(8)				
	REGENERATE ION EXCHANGERS	17	16	17
	OPERATE ION EXCHANGERS	17	14	17
	OPERATE HOT PROCESS SOFTENERS	1	1	0
10D(9)				
	OPERATE DUAL-BED DEMINERALIZERS	20	18	21
10D(10)				
	OPERATE MIXED-BED DEMINERALIZERS	14	7	10
10E(6)				
	CLEAN COMPONENTS OF REVERSE OSMOSIS UNITS	1	2	1
	REMOVE OR REPLACE REVERSE OSMOSIS UNIT MEMBRANES	1	1	1
	REMOVE OR REPLACE COMPONENTS OF REVERSE OSMOSIS UNITS	1	2	1
10E(8)				
	BACKWASH ION EXCHANGERS	26	18	21
	REMOVE OR REPLACE ION EXCHANGE RESINS	7	10	10
	REMOVE OR NEUTRALIZE CHEMICAL WARFARE AGENTS IN WATER	13	7	7
10E(9)				
	REPLACE DIAPHRAGMS ON DEMINERALIZERS	2	5	6

TABLE 51

EQUIPMENT TASKS NOT REFERENCED TO STS 566X1

TASK	PERCENT MEMBERS PERFORMING 3-LEVEL (N=106)	5-LEVEL (N=488)	7-LEVEL (N=156)
OPERATE WELL PUMPS	38	48	43
REMOVE OR REPLACE ELECTRIC MOTORS	29	41	42
INSPECT PIPING FOR CORROSION	29	37	43
ASSEMBLE OR DISASSEMBLE THREADED PIPE FITTINGS	26	36	32

TABLE 52

SELECTED TASKS MATCHED TO POI 3ABR566X1 BLOCKS

POI REFERENCE	TASK	TRAINING EMPHASIS*	PERCENT MEMBERS PERFORMING FIRST JOB (N=214)	FIRST ENLISTMENT (N=410)
II-6B				
	PERFORM TURBIDITY TESTS	3.19	13	12
	PERFORM PHENOL TESTS	2.95	6	6
II-6C				
	PERFORM CALCIUM HARDNESS TESTS	4.38	26	23
	PERFORM TOTAL HARDNESS TESTS	4.19	27	23
II-7C				
	PERFORM SUSPENDED SOLIDS TESTS	5.05	24	26
	PERFORM TOTAL SOLIDS TESTS	3.88	22	20
	PERFORM VOLATILE SOLIDS TESTS	3.14	19	18
II-7D				
	PERFORM CHEMICAL OXYGEN DEMAND (COD) TESTS	4.29	11	10
	PERFORM NITRATE NITROGEN TESTS	2.21	1	1
	PERFORM SULFIDE TESTS	2.21	1	1
	PERFORM GREASE TESTS	2.09	3	2
	PERFORM VOLATILE ACIDS TESTS	2.09	5	6
II-7E				
	PERFORM COLIFORM BACTERIOLOGICAL TESTS	3.43	8	9
III-3A				
	OPERATE DUAL-BED DEMINERALIZERS	5.19	19	20
	REGENERATE ION EXCHANGERS	4.62	17	16
	OPERATE ION EXCHANGERS	4.43	16	16

* AVERAGE TRAINING EMPHASIS = 2.42

TABLE 53

COMMON 566X1 TASKS NOT LINKED TO POI BLOCKS

TASK	TRAINING EMPHASIS*	PERCENT MEMBERS PERFORMING	
		FIRST JOB (N=214)	FIRST-TERM (N=410)
CLEAN GAS CHLORINATORS	6.45	35	43
REMOVE OR REPLACE GAS CHLORINATOR CLEAN VALVES	6.29	32	39
REMOVE OR REPLACE CHLORINE CYLINDERS	6.07	68	71
REMOVE OR REPLACE SEWER LIFT PUMPS	5.88	36	44
REMOVE OR REPLACE SUMP PUMPS	5.14	46	54
UNCLOG PUMPS	4.98	48	54
OPERATE WELL PUMPS	4.86	44	47
REPACK GLOBE VALVES	4.76	33	33
ADJUST FLOAT CONTROLS	4.67	32	38
REMOVE OR REPLACE COMPONENTS OF CHECK VALVES	4.48	39	42
REMOVE OR REPLACE ELECTRIC MOTORS	4.43	33	39
OPERATE ELECTRIC MOTORS	4.40	51	52
ADJUST CHECK VALVES	4.29	39	38
OPERATE PORTABLE GASOLINE ENGINES	4.29	32	37
REMOVE OR REPLACE WATER METERS	4.19	28	33
CHANGE CHARTS ON RECORDERS	4.00	51	53
VISUALLY CHECK CHARTS ON RECORDERS	3.95	54	52

* AVERAGE TRAINING EMPHASIS = 2.42

COMPARISON TO PREVIOUS OCCUPATIONAL SURVEYS

Plumbing Specialty

The Plumbing specialty was last surveyed in the spring of 1975, and the last occupational survey report written in December, 1975. The data from the 1979 survey were compared to the 1975 survey results to determine what changes, if any, have occurred in the career ladder.

As Table 54 shows, the career ladder structure has remained very stable, changing in only one regard since 1975. Roughly equivalent job groups were identified in both surveys. In 1975 and 1979, very large groups of general plumbing personnel were found, with the members performing what might be called the basic plumbing job. This indicates that the specialty has remained very homogeneous in terms of tasks performed. The 1975 survey identified a job group called Apprentice Plumbers (N=132) which is generally the equivalent of the limited and specialized independent job types identified in 1979. The only real difference in job groups centers on the 1979 surveys' identification of a large group of Structural Maintenance and Repair Personnel (N=118), a group not specifically identified in 1975.

Table 55 shows the changes in expressed job satisfaction between plumbers in 1975 and 1979. The table illustrates that job statisfaction has remained relatively unchanged since the last survey was administered.

Environmental Support Specialty

The last survey of the Environmental Support specialty was administered during 1973, with the last occupational survey report being published in October 1973. The comparison of the data from the 1979 survey with the results of the 1973 survey shows that the career ladder has remained heterogeneous in terms of tasks performed, with some new job groups being identified. Table 56 shows a comparison of jobs types that were identified in the two surveys. As the table illustrates, the major functional job types identified in 1973 were found to exist in roughly equivalent numbers in the present survey. The present survey however, identified job groups that were not found in the same numbers in the previous study. For example, while in the present study a relatively large group of Swimming Pool Operators (N=94, GRP136) was identified, no such group was identified in 1973. The 1973 survey identified NCOICs, Missile Support (N=7), Missile Support Specialists (N=7), and SAC Demineralization Specialists (N=10) as separate job groups that in the present survey were found to exist as one large group, Missile Water Section Personnel (GRP362, N=32).

Table 57 shows the changes in expressed job satisfaction between 1973 and 1979 for Environmental Support personnel. Job attitudes have changed somewhat since 1973. It is interesting to note that while the percentages of personnel who find their job interesting and who feel their talents and training well utilized have fallen slightly, the percentage of personnel who intend to reenlist has risen substantially.

TABLE 54

COMPARISON OF 1975 AND 1979 PLUMBING CAREER LADDER FUNCTIONAL JOB GROUPS

1975	1979
PLUMBER (N=680)	GENERAL PLUMBERS (N=699)
APPRENTICE PLUMBER (N=132)	DRAIN, FAUCET, WATER CLOSET REPAIRMEN (N=5) FIXTURE REPLACEMENT PERSONNEL (N=6) WATER SYSTEMS INSPECTORS (N=10) PIPE AND FIXTURE INSTALLERS (N=7) RED HORSE PLUMBERS (N=11) PIPE CUTTERS, THREADERS, ASSEMBLERS (N=5) PIPE ASSEMBLERS (N=7)
(NO COMPARABLE GROUP IDENTIFIED)	STRUCTURAL MAINTENANCE AND REPAIR PERSONNEL (N=118)
FIRST-LINE SUPERVISORS (N=23)	WORK CREW SUPERVISORS (N=9) PLUMBING SHOP FOREMEN (N=24)
SHOP CHIEFS AND SUPERINTENDENTS (N=70)	STRUCTURAL MAINTENANCE AND REPAIR MANAGERS (N=11) PLUMBING SECTION SUPERVISORS (N=31)
(NO COMPARABLE GROUP IDENTIFIED)	PLUMBING PLANNERS (N=27)

TABLE 55

COMPARISON OF JOB SATISFACTION INDICES 1975-1979 (PLUMBING)
(PERCENT MEMBERS RESPONDING)

	1975	1979
EXPRESSED JOB INTEREST:		
DULL	6	9
SO-SO	15	16
INTERESTING	77	73
NOT REPORTED	2	2
PERCEIVED UTILIZATION OF TALENTS AND TRAINING*:		
LITTLE OR NOT AT ALL	14	-
FAIRLY WELL OR BETTER	84	-
NOT REPORTED	2	-
PERCEIVED UTILIZATION OF TALENTS:		
LITTLE OR NOT AT ALL	-	18
FAIRLY WELL OR BETTER	-	82
NOT REPORTED	-	-
PERCEIVED UTILIZATION OF TRAINING:		
LITTLE OR NOT AT ALL	-	17
FAIRLY WELL OR BETTER	-	83
NOT REPORTED	-	-
REENLISTMENT INTENTIONS:		
NO, OR PROBABLY NO	46	48
YES, OR PROBABLY YES	47	50
NOT REPORTED	7	2

* ASKED AS ONE QUESTION IN 1975, BUT AS TWO IN 1979

TABLE 56

COMPARISON OF 1973 AND 1979 ENVIRONMENTAL SUPPORT CAREER LADDER FUNCTIONAL JOB GROUPS*

1973 JOB GROUPS	1979 JOB GROUPS
SEWAGE PLANT WORKER (N=156)	SEWAGE SYSTEMS PERSONNEL (N=113) SEWAGE PLANT OPERATORS (N=50)
SEWAGE EQUIPMENT CLEANER (N=89)	SEWAGE EQUIPMENT CLEANERS (N=5)
WATER TREATMENT SPECIALIST (N=172)	WATER PLANT PERSONNEL (N=111) WATER TREATMENT PERSONNEL (N=36)
UNIT CHIEF (N=79)	TECHNICAL SUPERVISORS (N=84)
NCOIC, SWIMMING POOL (N=7)	NCOIC, SWIMMING POOL (N=7)
NCOIC, WATER SOURCE CONTROL (N=8)	(NO COMPARABLE GROUP IDENTIFIED)
QUALITY CONTROL SUPERVISOR (N=12)	QUALTIY CONTROL & SYSTEMS INSPECTORS (N=8)
NCOIC, MISSILE SUPPORT (N=7)	(NO COMPARABLE GROUP IDENTIFIED)
SANITATION SUPERINTENDENT (N=69)	SANITATION SUPERINTENDENTS (N=27)
(NO COMPARABLE GROUP IDENTIFIED)	WATER PLANT & SWIMMING POOL MANAGERS (N=10)
(NO COMPARABLE GROUP IDENTIFIED)	SWIMMING POOL OPERATORS (N=94)
(WASTE PLANT/SWIMMING POOL SUPPORT WORKER, N=18, IN 1973, WAS PART OF SEWAGE PLANT WORKER JOB GROUP)	
LIFT STATION OPERATORS (N=6)	LIFT STATION OPERATORS (N=10)
IMHOFF SYSTEM OPERATOR (N=5)	(NO COMPARABLE GROUP IDENTIFIED)
	(GRP393, N=7, REPORTED HIGH MAINTENANCE OF IMHOFF SYSTEMS AND WAS IDENTIFIED AS PART OF SEWAGE SYSTEMS OPERATOR GROUP)
MISSILE SUPPORT SPEC. (N=7)	MISSILE WATER SECTION PERSONNEL (N=32)

* UNDERLINED JOB GROUPS ARE CLUSTERS OR INDEPENDENT JOB TYPES. THOSE NOT UNDERLINED ARE JOB TYPES IDENTIFIED WITHIN CLUSTERS.

TABLE 57

COMPARISON OF JOB SATISFACTION INDICES 1973-1979
(ENVIRONMENTAL SUPPORT)

	1973	1979
EXPRESSED JOB INTEREST:		
DULL	10	16
SO-SO	12	18
INTERESTING	75	64
NOT REPORTED	3	2
PERCEIVED UTILIZATION OF TALENTS AND TRAINING*:		
LITTLE OR NOT AT ALL	20	-
FAIRLY WELL OR BETTER	76	-
NOT REPORTED	4	-
PERCEIVED UTILIZATION OF TALENTS:		
LITTLE OR NOT AT ALL	-	33
FAIRLY WELL OR BETTER	-	66
NOT REPORTED	-	1
PERCEIVED UTILIZATION OF TRAINING:		
LITTLE OR NOT AT ALL	-	31
FAIRLY WELL OR BETTER	-	68
NOT REPORTED	-	1
REENLISTMENT INTENTIONS:		
NO, OR PROBABLY NO	60	47
YES, OR PROBABLY YES	38	52
NOT REPORTED	2	1

* ASKED AS ONE QUESTION IN 1973, BUT AS TWO IN 1979

EXPRESSED JOB SATISFACTION

Job satisfaction of Plumbing and Environmental Support personnel were compared to all direct support personnel who were surveyed in 1979. This comparison reveals whether members of a specialty are more or less satisfied than the members of related career ladders. This comparison can aid career ladder specialists in determining whether job satisfaction problems exist in these specialties.

Plumbing

As Table 58 shows, expressed job satisfaction was much higher for all plumbing enlistment groups than it was for all other direct support personnel.

Environmental Support

While the expressed job satisfaction for 566X1 personnel was lower than for plumbers, it was still generally higher than that of the comparison group. Only the perceived utilization of training for first term airmen was lower than in the comparison group.

Summary

Expressed job satisfaction was extremely high in Plumbers and moderately high in Environmental Support personnel. This, coupled with the fact that very few survey respondents in either specialty volunteered write-in comments, indicates high job satisfaction.

TABLE 58

JOB SATISFACTION COMPARISON

	FIRST ENLISTMENT (1-48 MONTHS TAFMS)			SECOND ENLISTMENT (49-96 MONTHS TAFMS)			CAREER (97+ MONTHS TAFMS)		
	COMPARATIVE*	552X5	566X1	COMPARATIVE*	552X5	566X1	COMPARATIVE*	552X5	566X1
EXPRESSED JOB INTEREST:									
INTERESTING	42	70	58	53	74	54	69	79	76
PERCEIVED UTILIZATION OF TALENTS:									
FAIRLY WELL OR BETTER	48	79	58	61	78	63	78	88	79
PERCEIVED UTILIZATION OF TRAINING:									
FAIRLY WELL OR BETTER	68	81	62	67	80	69	74	87	78
REENLISTMENT INTENTIONS:									
YES, OR PROBABLY YES	32	35	33	51	55	61	66	77	80

* THE COMPARATIVE SAMPLE INCLUDED PERSONNEL IN THE DIRECT SUPPORT (AFSCs 251X0, 391X0, 751X3, 753XX, AND 811XX) CAREER LADDERS SURVEYED IN 1979 (N=7,291).

IMPLICATIONS

Career Ladder Consolidation

The possibility of merging these two specialties was a major reason for this joint survey. The occupational survey data indicate that no firm basis exists for merging the two specialties. This conclusion is based on the manner in which the career ladder structure emerged. Three major functional areas were identified based on the tasks performed and the relative time incumbents spent performing these tasks. Two of these functional groups were composed almost entirely of the members of one particular AFSC. The Environmental Support function was composed almost entirely (99 percent) of 566X1 personnel, while the Plumbing function was composed totally of 552X5 personnel. While the third functional area was composed of both 552X5 and 566X1 personnel, the individual job types within the function were, for the most part, composed of members of one particular AFSC.

A second factor indicates the disparity of the two ladders. As shown in Tables 7, 8, and 9, there is little commonality in tasks performed between members of the two career ladders. Much of the commonality centers on general and nontechnical tasks. Figure 5 further graphically illustrates the great difference in career ladders by portraying the difference in relative time spent performing duties by AFSC groups.

Because the very distinct groupings in the career ladder structure, the difference in duties performed, and the very small core of common tasks, it must be concluded that the career ladders vary greatly in function and are not logical candidates for consolidation.

Career Ladder Documents

The survey data indicate that overall, the career ladder documents in both specialties are descriptive, with refinements possible. Subject matter specialists should review the AFR 39-1, STS, and POI references listed in this report to determine whether revision is warranted.

Training

Except for possible refinements in the Plans of Instruction (POIs) of the two courses, no training issues were noted. As shown in Table 9, the existence of only a very small core of tasks common to both Plumbing and Environmental Support personnel discourages consolidation of formal training of personnel in the two specialties.

APPENDIX A

TABLE I

REPRESENTATIVE TASKS PERFORMED BY SEWAGE SYSTEMS PERSONNEL
(GRP257)

TASK	PERCENT MEMBERS PERFORMING (N=113)
PERFORM pH TESTS	100
OPERATE PUMPS	96
PERFORM BIOCHEMICAL OXYGEN DEMAND (BOD) TESTS	96
REPACK PUMPS	95
CLEAN WATER AND WASTE WATER PLANT EQUIPMENT	92
ADJUST FLOW THROUGH ACTIVATING SLUDGE SYSTEMS	9[illegible]
RAKE BAR SCREENS	92
UNCLOG PUMPS	92
PERFORM CHLORINE RESIDUAL TESTS	90
OPERATE LIFT STATIONS	90
CHECK WATER OR WASTE WATER TEMPERATURES	90
PERFORM DISSOLVED OXYGEN (DO) TESTS	89
REMOVE OR REPLACE CHLORINE CYLINDERS	88
PERFORM SETTLEABLE SOLID TESTS	88
CHANGE CHARTS ON RECORDERS	86
CHECK ENGINE OIL LEVELS	84
VISUALLY CHECK INK LEVELS ON RECORDERS	83

TABLE II

REPRESENTATIVE TASKS PERFORMED BY WATER PLANT PERSONNEL
(GRP271)

TASK	PERCENT MEMBERS PERFORMING (N=111)
OPERATE PUMPS	
REPACK PUMPS	
PERFORM pH TESTS	94
ADD CHEMICALS TO SWIMMING POOL WATER	92
ADJUST CHEMICAL FEEDERS OR HYPOCHLORINATORS	91
ADD CHEMICALS TO CHEMICAL FEEDERS OR HYPOCHLORINATORS	90
PERFORM CHLORINE RESIDUAL TESTS	86
REMOVE OR REPLACE CHLORINE CYLINDERS	86
RECIRCULATE SWIMMING POOLS	85
OPERATE MANUAL VALVES	85
CLEAN SWIMMING POOL HAIR CATCHERS	84
FILL OR DRAIN SWIMMING POOLS	82
CLEAN CHEMICAL FEEDERS	78
COLLECT WATER SAMPLES	77

TABLE III

REPRESENTATIVE TASKS PERFORMED BY MISSILE WATER SECTION PERSONNEL
(GRP362)

TASK	PERCENT MEMBERS PERFORMING (N=32)
REMOVE OR REPLACE SUMP PUMPS	100
OPERATE PUMPS	97
PERFORM CHLORINE RESIDUAL TESTS	97
REPACK PUMPS	97
CLEAN CHEMICAL FEEDERS	97
ADJUST FLOAT CONTROLS	97
REMOVE OR REPLACE WATER METERS	94
ASSEMBLE OR DISASSEMBLE THREADED PIPE FITTINGS	94
PERFORM pH TESTS	94
ALIGN PUMPS TO MOTORS	94
OPERATE WELL PUMPS	91
VISUALLY CHECK AIR COMPRESSOR BELTS	91
OPERATE MANUAL VALVES	91
OPERATE AIR COMPRESSORS	91
INSPECT WATER STORAGE TANKS	91
REMOVE OR REPLACE WELL PUMPS	91

TABLE IV

REPRESENTATIVE TASKS PERFORMED BY CHEYENNE MOUNTAIN SANITATION SPECIALISTS
(GRP227)

TASK	PERCENT MEMBERS PERFORMING (N=5)
POST ENTRIES IN DAILY LOGS	100
POST ENTRIES IN MONTHLY LOGS	100
PERFORM pH TESTS	100
INSPECT WATER STORAGE TANKS	100
PERFORM CHLORIDE TESTS	100
EVALUATE WATER PLANT OPERATIONS	100
CLEAN HYPOCHLORINATORS	100
INSPECT EXTERIOR WATER DISTRIBUTION SYSTEMS FOR LEAKS	80
OPERATE FARM TRACTORS	80
INSPECT INTERIOR WATER DISTRIBUTION SYSTEMS	80
PERFORM OIL TESTS	80
PERFORM ALKALINITY TESTS	80
PERFORM ACIDITY TESTS	80
PERFORM POLYPHOSPHATE TESTS	80
PERFORM IRON TESTS	80
INSPECT LOADING OF REFUSE COLLECTION VEHICLES	80
OPERATE FORKLIFTS	60
INSPECT DISCARDING UNIT CONTAINERS	60
PREPARE OPERATOR'S INSPECTION GUIDE AND TROUBLE REPORT (GENERAL PURPOSE VEHICLES) FORMS (AFTO FORM 374)	60
OPERATE REFUSE INCINERATORS	60
INSPECT ENVIRONMENTAL EQUIPMENT	60
PREPARE MONTHLY LOGS FOR REVIEW BY PUBLIC HEALTH OFFICIALS	60

TABLE V

REPRESENTATIVE TASKS PERFORMED BY WATER TREATMENT PERSONNEL
(GRP232)

TASK	PERCENT MEMBERS PERFORMING (N=36)
PERFORM pH TESTS	100
PERFORM CHLORINE RESIDUAL TESTS	92
ADD CHEMICALS TO CHEMICAL FEEDERS OR HYPOCHLORINATORS	92
OPERATE PUMPS	89
ADJUST CHEMICAL FEEDERS OR HYPOCHLORINATORS	89
OPERATE MANUAL VALVES	83
PERFORM ALKALINITY TESTS	81
CLEAN CHEMICAL FEEDERS	81
REPACK PUMPS	81
COLLECT WATER SAMPLES	78
ADD CHEMICALS TO WATER PLANTS	75
CLEAN WATER AND WASTE WATER PLANT EQUIPMENT	72

TABLE VI

REPRESENTATIVE TASKS PERFORMED BY NCOICs, ENVIRONMENTAL SUPPORT (GRP345)

TASK	PERCENT MEMBERS PERFORMING (N=63)
OPERATE PUMPS	100
WRITE AIRMAN PERFORMANCE REPORTS (APRs)	95
COUNSEL SUBORDINATES ON WORK PROGRESS	95
PERFORM pH TESTS	95
COUNSEL SUBORDINATES ON PERSONAL PROBLEMS	94
CONDUCT OJT	94
PLAN WORK ASSIGNMENTS	92
MAINTAIN TRAINING RECORDS, CHARTS, OR GRAPHS	92
COUNSEL TRAINEES ON TRAINING PROBLEMS	92
SUPERVISE ENVIRONMENTAL SUPPORT SPECIALISTS (AFSC 56651)	90
SUPERVISE APPRENTICE ENVIRONMENTAL SUPPORT SPECIALISTS (AFSC 56631)	90
PERFORM CHLORINE RESIDUAL TESTS	90
INSPECT SAFETY EQUIPMENT	90
EVALUATE OJT TRAINEES	90
POST ENTRIES IN DAILY LOGS	90

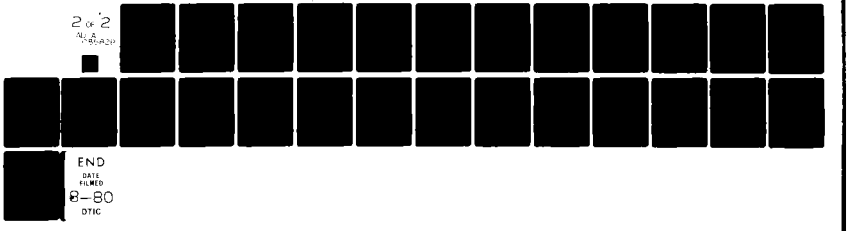
TABLE VII

REPRESENTATIVE TASKS PERFORMED BY CHEMICAL TREATMENT SUPERVISORS
(GRP368)

TASK	PERCENT MEMBERS PERFORMING (N=8)
ADD CHEMICALS TO CHEMICAL FEEDERS OR HYPOCHLORINATORS	100
ADJUST CHEMICAL FEEDERS OR HYPOCHLORINATORS	100
PERFORM pH TESTS	100
COLLECT WATER SAMPLES	100
ADD CHEMICALS TO WATER PLANTS	100
CLEAN GAS CHLORINATORS	100
REMOVE OR REPLACE CHLORINE CYLINDERS	100
CLEAN CHEMICAL FEEDERS	100
ASSIGN PERSONNEL TO DUTY POSITIONS	100
EVALUATE WATER PLANT OPERATIONS	88
INSPECT WATER PLANTS	88
MIX CHEMICALS	88
PERFORM CHLORINE RESIDUAL TESTS	88

AD-A085 828 AIR FORCE OCCUPATIONAL MEASUREMENT CENTER RANDOLPH AFB TX F/G 5/9
PLUMBING AND ENVIRONMENTAL SUPPORT SPECIALTIES AFSCS 552X5/566X--ETC(U)
MAY 80

UNCLASSIFIED NL



END
DATE FILMED
8-80
DTIC

TABLE VIII

REPRESENTATIVE TASKS PERFORMED BY NCOICs, SWIMMING POOLS
(GRP367)

TASK	PERCENT MEMBERS PERFORMING (N=7)
DIRECT SWIMMING POOL OPERATIONS	100
ADD CHEMICALS TO WATER PLANTS	100
RECIRCULATE SWIMMING POOLS	100
WRITE AIRMAN PERFORMANCE REPORTS (APPRs)	100
OPERATE PUMPS	100
ADD CHEMICALS TO CHEMICAL FEEDERS OR HYPOCHLORINATORS	100
REMOVE OR REPLACE CHLORINE CYLINDERS	100
FILL OR DRAIN SWIMMING POOLS	100
ADJUST CHEMICAL FEEDERS OR HYPOCHLORINATORS	100
ALIGN PUMPS TO MOTORS	100
SUPERVISE APPRENTICE ENVIRONMENTAL SUPPORT SPECIALISTS (AFSC 56631)	86
COUNSEL SUBORDINATES ON WORK PROGRESS	86

TABLE IX

REPRESENTATIVE TASKS PERFORMED BY SWIMMING POOL OPERATORS (GRP136)

TASK	PERCENT MEMBERS PERFORMING (N=94)
ADD CHEMICALS TO SWIMMING POOL WATER	96
PERFORM pH TESTS	95
OPERATE PUMPS	87
CLEAN SWIMMING POOL HAIR CATCHERS	86
FILL OR DRAIN SWIMMING POOLS	84
ADD CHEMICALS TO CHEMICAL FEEDERS OR HYPOCHLORINATORS	81
READ METERS OR RECORDING DEVICES	80
PERFORM CHLORINE RESIDUAL TESTS	78
REMOVE OR REPLACE CHLORINE CYLINDERS	78
RECIRCULATE SWIMMING POOLS	73
ADJUST CHEMICAL FEEDERS OR HYPOCHLORINATORS	69
REPACK PUMPS	63
READ INSTALLED METERS, SUCH AS WATER OR GAS METERS	57
BACKWASH DE FILTERS	57

TABLE X

REPRESENTATIVE TASKS PERFORMED BY SEWAGE PLANT OPERATORS
(GRP102)

TASK	PERCENT MEMBERS PERFORMING (N=50)
PERFORM pH TESTS	90
CHECK WATER OR WASTE WATER TEMPERATURES	86
RAKE BAR SCREENS	84
CLEAN WATER AND WASTE WATER PLANT EQUIPMENT	78
READ METERS OR RECORDING DEVICES	72
PERFORM BIOCHEMICAL OXYGEN DEMAND (BOD) TESTS	70
REPACK PUMPS	70
PERFORM CHLORINE RESIDUAL TESTS	68
OPERATE PUMPS	66
POST ENTRIES IN DAILY LOGS	66
PERFORM DISSOLVED OXYGEN (DO) TESTS	62
REMOVE OR REPLACE CHLORINE CYLINDERS	62
CLEAN TRICKLING FILTER DISTRIBUTION NOZZLES	58
CLEAN SIDEWALLS ON SEWAGE SETTLING TANKS	58
OPERATE SLUDGE PUMPS	56

TABLE XI

REPRESENTATIVE TASKS PERFORMED BY LIFT STATION OPERATORS
(GRP097)

TASK	PERCENT MEMBERS PERFORMING (N=10)
REMOVE OR REPLACE COMPONENTS OF CHECK VALVES	100
REMOVE OR REPLACE SEWER LIFT PUMPS	90
OPERATE PUMPS	90
PERFORM CHLORINE RESIDUAL TESTS	80
REMOVE OR REPLACE SUMP PUMPS	80
ADJUST FLOAT CONTROLS	80
REPACK PUMPS	80
REMOVE OR REPLACE COMPONENTS OF HYPOCHLORINATORS OR CHEMICAL FEEDERS	70
ADD CHEMICALS TO CHEMICAL FEEDERS OR HYPOCHLORINATORS	70
ADJUST CHEMICAL FEEDERS OR HYPOCHLORINATORS	70
INSPECT SANITARY LIFT STATION EQUIPMENT	60
PERFORM MAINTENANCE ON SEWAGE LIFT PUMPS	50
OPERATE LIFT STATIONS	50
REMOVE DEBRIS FROM LIFT STATIONS	50

TABLE XII

REPRESENTATIVE TASKS PERFORMED BY NOVICE ENVIRONMENTAL SUPPORT PERSONNEL
(GRP317)

TASK	PERCENT MEMBERS PERFORMING (N=6)
PERFORM CHLORINE RESIDUAL TESTS	100
PERFORM pH TESTS	100
ADD CHEMICALS TO SWIMMING POOL WATER	100
ADJUST CHEMICAL FEEDERS OR HYPOCHLORINATORS	83
WASH OR WAX SHOP VEHICLES	83
ADD CHEMICALS TO CHEMICAL FEEDERS OR HYPOCHLORINATORS	67
CLEAN SWIMMING POOL HAIR CATCHERS	67
BACKWASH RAPID OR SLOW SAND FILTERS	67
REMOVE OR REPLACE CHLORINE CYLINDERS	67
OPERATE MANUAL VALVES	67
FILL OR DRAIN SWIMMING POOLS	67
CHANGE CHARTS ON RECORDERS	50
ADD CHEMICALS TO WATER PLANTS	50
RECIRCULATE SWIMMING POOLS	50
OPERATE LIFT STATIONS	50
BACKWASH PRESSURE FILTERS	50
CLEAN CHEMICAL FEEDERS	50
REMOVE OR REPLACE SEWER LIFT PUMPS	50

TABLE XIII

REPRESENTATIVE TASKS PERFORMED BY WATER ANALYSIS PERSONNEL
(GRP048)

TASK	PERCENT MEMBERS PERFORMING (N=16)
PERFORM BIOCHEMICAL OXYGEN DEMAND (BOD) TESTS	94
CLEAN AND STERILIZE LABORATORY EQUIPMENT	94
MIX CHEMICALS	88
PERFORM DISSOLVED OXYGEN (DO) TESTS	88
PERFORM SETTLEABLE SOLID TESTS	88
PERFORM pH TESTS	88
PERFORM CHLORINE RESIDUAL TESTS	81
CHECK WATER OR WASTE WATER TEMPERATURES	75
PERFORM SUSPENDED SOLIDS TESTS	69
ADJUST INCUBATORS	69
PERFORM ALKALINITY TESTS	69
PERFORM TOTAL SOLIDS TESTS	63
PERFORM DISSOLVED SOLIDS TESTS	63
PERFORM ACIDITY TESTS	63
PERFORM COLOR TESTS	56
PERFORM CALCIUM HARDNESS TESTS	50
PERFORM CARBON DIOXIDE TESTS	50
PERFORM CHLORIDE TESTS	50

TABLE XIV

REPRESENTATIVE TASKS PERFORMED BY SEWAGE EQUIPMENT CLEANERS
(GRP198)

TASK	PERCENT MEMBERS PERFORMING (N=5)
CLEAN SIDEWALLS ON SEWAGE SETTLING TANKS	100
RAKE BAR SCREENS	100
CLEAN CHANNELS ON SEWAGE SETTLING TANKS	80
RECIRCULATE WASTE WATER	80
CLEAN COMPONENTS OF MECHANICAL BAR SCREENS	80
CLEAN GRIT REMOVAL UNITS	80
CLEAN TRICKLING FILTER DISTRIBUTION NOZZLES	80
READ METERS OR RECORDING DEVICES	80
WASH OR WAX SHOP VEHICLES	80
PERFORM pH TESTS	80
CLEAN WATER AND WASTE WATER PLANT EQUIPMENT	60
CLEAN PARSHALL FLUMES	60
SCRAPE OR PAINT EQUIPMENT OR FACILITIES	60

TABLE XV

REPRESENTATIVE TASKS PERFORMED BY GENERAL PLUMBERS
(GRP386)

TASK	PERCENT MEMBERS PERFORMING (N=699)
REAM PIPING	98
ASSEMBLE COPPER TUBING USING SWEAT SOLDERED FITTING	97
REMOVE OR REPLACE FAUCETS	97
REMOVE OR REPLACE URINALS	97
REMOVE OR REPLACE TRAPS	96
OPEN CLOGGED OR RESTRICTED DRAINS USING HAND OPERATED AUGERS	96
OPEN CLOGGED OR RESTRICTED DRAINS USING POWER OPERATED AUGERS	96
REMOVE OR REPLACE COMPONENTS OF WATER CLOSET TANK FLOAT VALVES	96
ASSEMBLE OR DISASSEMBLE THREADED PIPE FITTINGS	95
BEND TUBING BY HAND	95
REMOVE OR REPLACE COMPONENTS OF WATER CLOSET TANK FLUSH VALVES	95
ASSEMBLE COPPER TUBING USING FLARED FITTINGS	94
REMOVE OR REPLACE COMPONENTS OF FAUCETS	93
REMOVE OR REPLACE COMPONENTS OF FLUSHOMETER VALVES	93
MEASURE PIPE LENGTHS	93
ASSEMBLE OR DISASSEMBLE PLASTIC PIPE FITTINGS	93
THREAD PIPES USING MOUNTED POWER THREADERS	91
THREAD PIPES USING HAND THREADERS	91
LOCATE LEAKS IN WATER OR SEWER PIPES	90
REMOVE OR REPLACE WATER FOUNTAINS	90

TABLE XVI

REPRESENTATIVE TASKS PERFORMED BY FIXTURE REPLACEMENT PERSONNEL
(GRP419)

TASK	PERCENT MEMBERS PERFORMING (N=6)
REMOVE OR REPLACE FAUCETS	100
REMOVE OR REPLACE COMPONENTS OF WATER CLOSET TANK FLOAT VALVES	100
REMOVE OR REPLACE COMPONENTS OF FAUCETS	100
LOCATE LEAKS IN WATER OR SEWER PIPES	100
REMOVE OR REPLACE COMPONENTS OF WATER CLOSET TANK FLUSH VALVES	100
REMOVE OR REPLACE COMPONENTS OF GLOBE VALVES	100
REMOVE OR REPLACE WATER FOUNTAINS	100
REMOVE OR REPLACE COMPONENTS OF GLOBE VALVES	100
REMOVE OR REPLACE URINALS	100
REMOVE OR REPLACE DOMESTIC SINKS	100
REMOVE OR REPLACE INSIDE EMERGENCY EYE WASHERS	100
REMOVE OR REPLACE INSIDE EMERGENCY SHOWERS	100
REMOVE OR REPLACE COMPONENTS OF MIXING VALVES	83
REMOVE OR REPLACE VALVES USING SWEAT SOLDERED CONNECTIONS	83
REPACK GATE VALVES	83

TABLE XVII

REPRESENTATIVE TASKS PERFORMED BY WORK CREW SUPERVISORS
(GRP308)

TASK	PERCENT MEMBERS PERFORMING (N=9)
REMOVE OR REPLACE COMPONENTS OF FAUCETS	100
OPEN CLOGGED OR RESTRICTED DRAINS USING POWER OPERATED AUGERS	100
OPEN CLOGGED OR RESTRICTED DRAINS USING HAND OPERATED AUGERS	100
ASSEMBLE COPPER TUBING USING FERRULED FITTINGS	100
REMOVE OR REPLACE DOMESTIC LAVATORIES	100
OPEN CLOGGED OR RESTRICTED DRAINS USING VACUUM PRESSURE PLUNGERS	89
REMOVE OR REPLACE FAUCETS	89
REMOVE OR REPLACE COMPONENTS OF WATER CLOSET TANK FLOAT VALVES	89
REMOVE OR REPLACE TRAPS	89
COUNSEL SUBORDINATES ON WORK PROGRESS	89
WRITE AIRMAN PERFORMANCE REPORTS (APRs)	89
THREAD PIPES USING HAND THREADERS	78
ASSIGN PERSONNEL TO DUTY POSITIONS	67
COUNSEL SUBORDINATES ON PERSONAL PROBLEMS	67
ISOLATE MALFUNCTIONS IN WATER SYSTEMS TO DETERMINE CAUSES OF LOSS OF PRESSURE	67

TABLE XVIII

REPRESENTATIVE TASKS PERFORMED BY WATER SYSTEMS INSPECTORS
(GRP275)

TASK	PERCENT MEMBERS PERFORMING (N=10)
REMOVE OR REPLACE FAUCETS	100
REAM PIPING	100
INSPECT MANHOLES	100
OPEN CLOGGED OR RESTRICTED DRAINS USING POWER OPERATED AUGERS	100
ASSEMBLE COPPER TUBING USING SWEAT SOLDERED FITTINGS	100
OPEN CLOGGED OR RESTRICTED DRAINS USING HAND OPERATED AUGERS	100
INSPECT PLUMBING FIXTURES	90
MEASURE PIPE LENGTHS	90
REMOVE OR REPLACE TRAPS	80
OPEN CLOGGED OR RESTRICTED DRAINS USING CHEMICALS	80
REMOVE OR REPLACE COMPONENTS OF GLOBE VALVES	70
BACK FILL TRENCHES	70
INSPECT EXTERIOR WATER DISTRIBUTION SYSTEMS FOR LEAKS	70
INSPECT FIRE HYDRANTS	60

TABLE XIX

REPRESENTATIVE TASKS PERFORMED BY PIPE AND FIXTURE INSTALLERS
(GRP261)

TASK	PERCENT MEMBERS PERFORMING (N=7)
CALCULATE DESIRED FALL PER FOOT OF PIPING	100
ASSEMBLE OR DISASSEMBLE THREADED PIPE FITTINGS	100
CUT OPENINGS IN MASONRY BLOCK STRUCTURES FOR INSTALLATION OF PLUMBING USING HAND TOOLS	100
CUT OPENINGS IN WOOD STRUCTURES FOR INSTALLATION OF PLUMBING USING HAND TOOLS	100
ASSEMBLE COPPER TUBING USING FLARED FITTINGS	100
ASSEMBLE PLASTIC PIPES USING SOLVENT MOLD JOINTS	100
ASSEMBLE COPPER TUBING USING FERRULED FITTINGS	100
ASSEMBLE CAST IRON BELL AND SPIGOT PIPES USING CAULKED JOINTS	100
INSTALL PLUMBING FIXTURES IN RENOVATED STRUCTURES	86
MEASURE GRADE OF PIPE LINES USING LEVELS	86
INSTALL PREFORMED INSULATION ON PIPES	86
DIRECT LOWERING OF PIPES INTO TRENCHES BY EQUIPMENT OPERATORS	86
ATTACH PIPES TO BUILDING STRUCTURES	86
REVIEW ENGINEERING DRAWINGS OR SPECIFICATIONS TO DETERMINE PLUMBING INSTALLATION METHODS	71

TABLE XX

REPRESENTATIVE TASKS PERFORMED BY PLUMBING SHOP FOREMEN
(GRP286)

TASK	PERCENT MEMBERS PERFORMING (N=24)
FOLLOW-UP SUPPLY PROBLEMS	100
PLAN WORK ASSIGNMENTS	100
COUNSEL SUBORDINATES ON WORK PROGRESS	100
COUNSEL SUBORDINATES ON PERSONAL PROBLEMS	100
BEND TUBING BY HAND	100
ASSEMBLE COPPER TUBING USING FERRULED FITTINGS	100
COORDINATE WORK PROGRAMS WITH STRUCTURAL SUPERINTENDENTS	96
ASSEMBLE COPPER TUBING USING SWEAT SOLDERED FITTINGS	96
ASSEMBLE SLIP JOINT CONNECTIONS	96
ATTACH PIPES TO BUILDING STRUCTURES	96
ASSEMBLE COPPER TUBING USING FLARED FITTINGS	96
COORDINATE WITH WORK CONTROL SECTIONS ON WORK SCHEDULES	92
ESTABLISH WORK PRIORITIES	92
COORDINATE WITH PLANNING SECTIONS ON WORK REQUIREMENTS	92
REVIEW COMMERCIAL PUBLICATIONS TO DETERMINE HOW TO ORDER SUPPLIES OR EQUIPMENT	92
ASSEMBLE OR DISASSEMBLE THREADED PIPE FITTINGS	92
MEASURE PIPE LENGTHS	92
REAM TUBING	92
CALCULATE DESIRED FALL PER FOOT OF PIPING	92
REAM PIPING	92

TABLE XXI

REPRESENTATIVE TASKS PERFORMED BY RED HORSE PLUMBERS
(GRP342)

TASK	PERCENT MEMBERS PERFORMING (N=11)
ATTACH PIPES TO BUILDING STRUCTURES	100
ASSEMBLE CAST IRON NO HUB PIPES	100
INSTALL PIPE STRAPS	100
THREAD PIPES USING HAND THREADERS	91
MEASURE PIPE LENGTHS	91
APPLY INSULATING PIPE WRAPS	91
BACK FILL TRENCHES	82
THREAD PIPES USING MOUNTED POWER THREADERS	82
INSTALL PLUMBING FIXTURES IN RENOVATED STRUCTURES	73
CUT OPENINGS IN WOOD STRUCTURES FOR INSTALLATION OF PLUMBING USING HAND TOOLS	73
LOWER PIPE INTO TRENCHES MANUALLY	64
CUT OPENINGS IN CONCRETE STRUCTURES FOR INSTALLATION OF PLUMBING USING HAND TOOLS	64
CUT STEEL PIPES	64
DRAIN EXCAVATIONS USING BUCKETS OR CANS	64
CALCULATE DESIRED FALL PER FOOT OF PIPING	55
DRAIN EXCAVATIONS USING DIAPHRAGM PUMPS	55

TABLE XXII

REPRESENTATIVE TASKS PERFORMED BY PIPE CUTTERS, THREADERS, AND ASSEMBLERS
(GRP266)

TASK	PERCENT MEMBERS PERFORMING (N=5)
ASSEMBLE COPPER TUBING USING SWEAT SOLDERED FITTINGS	100
ASSEMBLE OR DISASSEMBLE PLASTIC PIPE FITTINGS	100
ASSEMBLE COPPER TUBING USING FLARED FITTINGS	100
DISASSEMBLE OR ASSEMBLE FIRE HYDRANTS	100
THREAD PIPES USING MOUNTED POWER THREADERS	80
ASSEMBLE OR DISASSEMBLE THREADED PIPE FITTINGS	80
BEND TUBING BY HAND	80
OPEN CLOGGED OR RESTRICTED DRAINS USING HAND OPERATED AUGERS	80
REAM PIPING	80
APPLY INSULATING PIPE WRAPS	80
DRAIN EXCAVATIONS USING DIAPHRAGM PUMPS	80
REMOVE OR REPLACE FAUCETS	80
REMOVE OR REPLACE DOMESTIC LAVATORIES	80
REMOVE OR REPLACE DOMESTIC CLOTHES WASHING MACHINES	80
RESET CLAPPER VALVE ON INTERIOR FIRE PROTECTION SYSTEMS	60

TABLE XXIII

REPRESENTATIVE TASKS PERFORMED BY STRUCTURAL MAINTENANCE AND REPAIR PERSONNEL (GRP200)

TASK	PERCENT MEMBERS PERFORMING (N=118)
REMOVE OR REPLACE FAUCETS	96
REMOVE OR REPLACE COMPONENTS OF FAUCETS	94
REMOVE OR REPLACE COMPONENTS OF FLUSHOMETER VALVES	87
REMOVE OR REPLACE COMPONENTS OF WATER CLOSET TANK FLOAT VALVES	87
REMOVE OR REPLACE COMPONENTS OF WATER CLOSET TANK FLUSH VALVES	86
OPEN CLOGGED OR RESTRICTED DRAINS USING POWER OPERATED AUGERS	85
REMOVE OR REPLACE TRAPS	85
OPEN CLOGGED OR RESTRICTED DRAINS USING HAND OPERATED AUGERS	81
BEND TUBING BY HAND	81
ASSEMBLE COPPER TUBING USING SWEAT SOLDERED FITTINGS	78
OPEN CLOGGED OR RESTRICTED DRAINS USING VACUUM PRESSURE PLUNGERS	77
REMOVE OR REPLACE URINALS	75
ASSEMBLE OR DISASSEMBLE THREADED PIPE FITTINGS	73
REAM PIPING	70
REMOVE OR REPLACE DOMESTIC LAVATORIES	69

TABLE XXIV

REPRESENTATIVE TASKS PERFORMED BY DRAIN, FAUCET, AND WATER CLOSET REPAIRMEN
(GRP196)

TASK	PERCENT MEMBERS PERFORMING (N=5)
REMOVE OR REPLACE FAUCETS	100
OPEN CLOGGED OR RESTRICTED DRAINS USING HAND OPERATED AUGERS	100
OPEN CLOGGED OR RESTRICTED DRAINS USING VACUUM PRESSURE PLUNGERS	80
REMOVE OR REPLACE COMPONENTS OF WATER CLOSET TANK FLUSH VALVES	80
REMOVE OR REPLACE COMPONENTS OF WATER CLOSET TANK FLOAT VALVES	60
OPEN CLOGGED OR RESTRICTED DRAINS USING STEEL TAPES	60
REMOVE OR REPLACE COMPONENTS OF FAUCETS	60
OPEN CLOGGED OR RESTRICTED DRAINS USING CHEMICALS	60

TABLE XXV

REPRESENTATIVE TASKS PERFORMED BY PIPE ASSEMBLERS
(GRP115)

TASK	PERCENT MEMBERS PERFORMING (N=7)
ASSEMBLE COPPER TUBING USING FERRULED FITTINGS	100
ASSEMBLE COPPER TUBING USING FLARED FITTINGS	100
BEND TUBING BY HAND	86
ASSEMBLE OR DISASSEMBLE THREADED PIPE FITTINGS	86
ASSEMBLE CAST IRON NO HUB PIPES	86
CUT CAST IRON PIPES	86
ASSEMBLE COPPER TUBING USING SWEAT SOLDERED FITTINGS	71
APPLY INSULATING PIPE WRAPS	71
INSPECT PIPING FOR CORROSION	71
ASSEMBLE CAST IRON BELL AND SPIGOT PIPES USING CAULKED JOINTS	71
ASSEMBLE SLIP JOINT CONNECTIONS	57
ATTACH PIPES TO BUILDING STRUCTURES	57
ASSEMBLE OR DISASSEMBLE PLASTIC PIPE FITTINGS	57
ASSEMBLE PLASTIC PIPES USING SOLVENT MOLD JOINTS	57
THREAD PIPES USING MOUNTED POWER THREADERS	57
REMOVE OR REPLACE SUMP PUMPS	57

TABLE XXVI

REPRESENTATIVE TASKS PERFORMED BY STRUCTURAL MAINTENANCE AND REPAIR MANAGERS (GRP600)

TASK	PERCENT MEMBERS PERFORMING (N=11)
REVIEW STRUCTURAL MAINTENANCE AND REPAIR TEAM JOB ORDERS FOR COMPLIANCE	100
PREPARE MAINTENANCE SCHEDULES	100
COORDINATE WITH WORK CONTROL SECTIONS ON WORK SCHEDULES	100
PLAN WORK ASSIGNMENTS	100
ESTABLISH REQUIREMENTS FOR MAINTENANCE OF EQUIPMENT OR FACILITIES	100
REVIEW BASE CIVIL ENGINEER WEEKLY WORK SCHEDULE FORMS (AF FORM 561) FOR TIME COMPLIANCE	100
COORDINATE WORK PROGRAMS WITH STRUCTURAL SUPERINTENDENTS	100
REVIEW BCE JOB ORDER FORMS (AF FORM 1879) TO DETERMINE JOB REQUIREMENTS	91
COORDINATE WORK REQUIREMENTS WITH WORK PRODUCTION CONTROL SECTIONS	91
COORDINATE WORK REQUIREMENTS WITH PROGRAMMING SECTIONS	82

TABLE XXVII

REPRESENTATIVE TASKS PERFORMED BY PLUMBING SECTION SUPERVISORS
(GRP407)

TASK	PERCENT MEMBERS PERFORMING (N=31)
COORDINATE WORK PROGRAMS WITH STRUCTURAL SUPERINTENDENTS	97
ESTABLISH WORK PRIORITIES	97
FOLLOW-UP SUPPLY PROBLEMS	97
COUNSEL SUBORDINATES ON PERSONAL PROBLEMS	97
COORDINATE WITH WORK CONTROL SECTIONS ON WORK SCHEDULES	97
COUNSEL SUBORDINATES ON WORK PROGRESS	97
PLAN WORK ASSIGNMENTS	90
SUPERVISE PLUMBING SPECIALISTS (AFSC 552X5)	90
WRITE AIRMAN PERFORMANCE REPORTS (APRs)	90
REVIEW WORKING DRAWINGS TO DETERMINE PLUMBING INSTALLATION METHODS	90
COORDINATE WITH PLANNING SECTIONS ON WORK REQUIRMENTS	87
REVIEW BCE JOB ORDER FORMS (AF FORM 1879) TO DETERMINE JOB REQUIREMENTS	84

TABLE XXVIII

REPRESENTATIVE TASKS PERFORMED BY SANITATION SUPERINTENDENTS
(GRP325)

TASK	PERCENT MEMBERS PERFORMING (N=27)
SUPERVISE APPRENTICE PLUMBING SPECIALISTS (AFSC 55235)	100
FOLLOW-UP SUPPLY PROBLEMS	100
COUNSEL SUBORDINATES ON PERSONAL PROBLEMS	100
ESTABLISH OFFICE INSTRUCTIONS (OI) OR STANDARD OPERATING PROCEDURES (SOP)	100
ESTABLISH REQUIREMENTS FOR MAINTENANCE OF EQUIPMENT OR FACILITIES	96
ASSIGN PERSONNEL TO DUTY POSITIONS	93
SCHEDULE LEAVES OR PASSES	93
ESTABLISH WORK PRIORITIES	89
ESTABLISH PERFORMANCE STANDARDS	89
DIRECT SWIMMING POOL OPERATIONS	67
EVALUATE WASTE PLANT OPERATIONS	59

TABLE XXIX

REPRESENTATIVE TASKS PERFORMED BY WATER PLANT AND SWIMMING POOL MANAGERS
(GRP352)

TASK	PERCENT MEMBERS PERFORMING (N=10)
SUPERVISE APPRENTICE ENVIRONMENTAL SUPPORT SPECIALISTS (AFSC 56631)	100
ESTABLISH WORK PRIORITIES	100
COUNSEL SUBORDINATES ON WORK PROGRESS	100
ESTABLISH REQUIREMENTS FOR MAINTENANCE OF EQUIPMENT OR FACILITIES	100
PERFORM pH TESTS	100
FOLLOW-UP SUPPLY PROBLEMS	90
OPERATE PUMPS	90
ADJUST CHEMICAL FEEDERS OR HYPOCHLORINATORS	90
SUPERVISE ENVIRONMENTAL SUPPORT SPECIALISTS (AFSC 56651)	80
DIRECT SWIMMING POOL OPERATIONS	80
WRITE AIRMAN PERFORMANCE REPORTS (APRs)	80
INSPECT SAFETY EQUIPMENT	80
ADD CHEMICALS TO SWIMMING POOL WATER	80

TABLE XXX

REPRESENTATIVE TASKS PERFORMED BY WASTE AND WATER PLANT NCOICs
(GRP099)

TASK	PERCENT MEMBERS PERFORMING (N=11)
WRITE AIRMAN PERFORMANCE REPORTS (APRs)	100
PERFORM pH TESTS	100
SUPERVISE APPRENTICE PLUMBING SPECIALISTS (AFSC 55235)	91
COUNSEL SUBORDINATES ON WORK PROGRESS	91
CONDUCT OJT	73
EVALUATE MONTHLY LOGS	73
PERFORM CHLORINE RESIDUAL TESTS	73
PERFORM BIOCHEMICAL OXYGEN DEMAND (BOD) TESTS	73
PERFORM SETTLEABLE SOLID TESTS	73
PLAN WORK ASSIGNMENTS	73
POST ENTRIES IN MONTHLY LOGS	73
COUNSEL TRAINEES ON TRAINING PROBLEMS	64
OPERATE PUMPS	64
ASSIGN PERSONNEL TO DUTY POSITIONS	64

TABLE XXXI

REPRESENTATIVE TASKS PERFORMED BY QUALITY CONTROL AND SYSTEMS INSPECTORS
(GRP164)

TASK	PERCENT MEMBERS PERFORMING (N=8)
EVALUATE INSPECTION REPORTS OR PROCEDURES	100
INSPECT SAFETY EQUIPMENT	100
EVALUATE ADMINISTRATIVE FORMS, FILES, OR PROCEDURES	88
EVALUATE CAPABILITIES OF EQUIPMENT	88
INSPECT EXTERIOR WATER DISTRIBUTION SYSTEMS FOR LEAKS	88
EVALUATE USE OF EQUIPMENT OR SUPPLIES	88
INSPECT PIPING FOR CORROSION	88
EVALUATE COMPLIANCE WITH WORK STANDARDS	75
INSPECT ENVIRONMENTAL EQUIPMENT	75
INSPECT METAL TANKS OR STRUCTURES	75
COMPILE REPORTS OR RECORDS FROM INSPECTION SURVEILLANCE	75

TABLE XXXII

REPRESENTATIVE TASKS PERFORMED BY PLUMBING INSTALLATION PLANNERS
(GRP168)

TASK	PERCENT MEMBERS PERFORMING (N=7)
REVIEW ENGINEERING DRAWINGS OR SPECIFICATIONS TO DETERMINE PLUMBING INSTALLATION METHODS	100
REVIEW WORKING DRAWINGS TO DETERMINE PLUMBING INSTALLATION METHODS	100
PLAN LAYOUTS OF FIELD SANITATION FACILITIES OR SYSTEMS	100
PREPARE WORKING DRAWINGS FOR PLUMBING INSTALLATIONS	86
COORDINATE WITH PLANNING SECTIONS ON WORK REQUIREMENTS	71
ANNOTATE MATERIALS AND EQUIPMENT LIST FORMS (AF FORM 1445)	57
REVIEW COMMERCIAL PUBLICATIONS TO DETERMINE HOW TO ORDER SUPPLIES OR EQUIPMENT	57
EVALUATE WORKING DRAWINGS	57

TABLE XXXIII

REPRESENTATIVE TASKS PERFORMED BY PLUMBING REQUIREMENTS PLANNERS
(GRP284)

TASK	PERCENT MEMBERS PERFORMING (N=11)
ANNOTATE MATERIALS AND EQUIPMENT LIST FORMS (AF FORM 1445)	100
REVIEW JOB PHASE CALCULATION SHEET FORMS (AF FORM 1081) FOR GUIDANCE IN PERFORMING TASKS	100
REVIEW COMMERCIAL PUBLICATIONS TO DETERMINE HOW TO ORDER SUPPLIES OR EQUIPMENT	100
REVIEW WORKING DRAWINGS TO DETERMINE PLUMBING INSTALLATION METHODS	100
PREPARE WORKING DRAWINGS FOR PLUMBING INSTALLATIONS	91
REVIEW ENGINEERING DRAWINGS OR SPECIFICATIONS TO DETERMINE PLUMBING INSTALLATION METHODS	91
REVIEW BASE CIVIL ENGINEER WORK ORDER FORMS (AF FORM 327) TO DETERMINE JOB REQUIREMENTS	82
REVIEW BCE JOB ORDER FORMS (AF FORM 1879) TO DETERMINE JOB REQUIREMENTS	82
REVIEW COMMERCIAL PUBLICATIONS TO DETERMINE INSTALLATION METHODS	82
PLAN LAYOUTS OF PLUMBING FACILITIES	82
UPDATE BASE CIVIL ENGINEER WORK CLEARANCE REQUEST FORMS (AF FORM 103)	73
FOLLOW-UP SUPPLY PROBLEMS	73
PREPARE BCE WORK REQUEST FORMS (AF FORM 332)	73

TABLE XXXIV

REPRESENTATIVE TASKS PERFORMED BY ENVIRONMENTAL SUPPORT RED HORSE PERSONNEL (GRP017)

TASK	PERCENT MEMBERS PERFORMING (N=11)
SET UP ERDLATORS	100
SET UP FIELD ERDLATORS	100
OPERATE ERDLATORS	88
INSPECT DIATOMACEOUS EARTH (DE) FILTERS	88
BACKWASH DE FILTERS	88
PRECOAT FILTERS	75
OPERATE PORTABLE GASOLINE ENGINES	75
PERFORM OPERATOR MAINTENANCE ON FIELD ERDLATORS	63
OPERATE FORKLIFTS	63
SET UP OR TEAR DOWN FIELD WATER DISTRIBUTION SYSTEMS	50